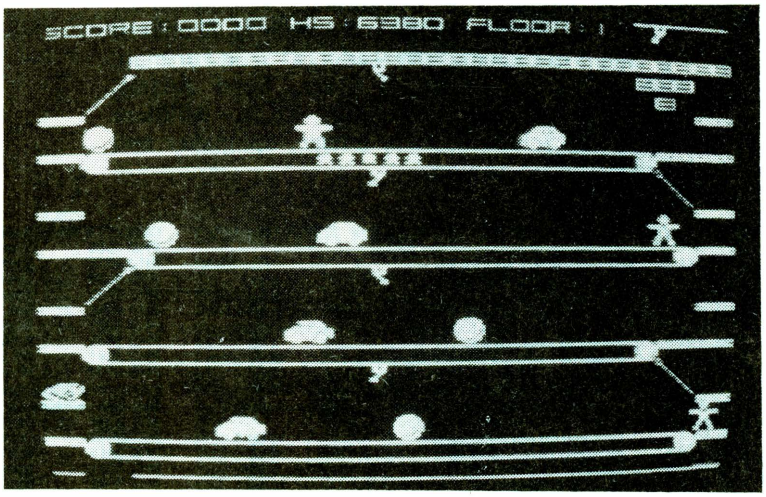
Covering the TI99/4A, the Myarc 9640 and compatibles

MICROpendium

Volume 4 Number 10 November 1987 $2.00

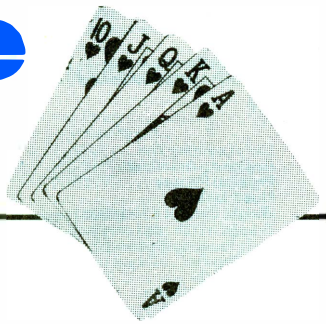


Intruder

A game requiring skill and timing

Poker Solitaire

Take a card



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Legends
QS Wheel
Spin-to-Win
Music Preprocessor

Geneve

'Fixes' for Video Chess & TI-Artist

Inside

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- Sorting in Forth
- Loops & Arrays in c99
- Additions to User Supported Software
- Update on The Source

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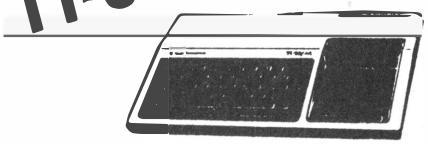

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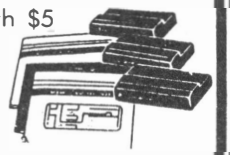

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- Adapting Music Maker for disks
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- Review of PC-Transfer

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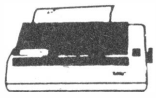

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Mechatronic card and Geneve

Myarc's Jack Riley wants us to make sure that everyone understands that the Mechatronic 80-column will not run the Myarc Disk Operating System nor any software designed for the Geneve 9640. It won't. Also, though it was mentioned that the card ran nearly as fast as the Geneve using a Myarc GPL interpreter, it should be noted that the card was run with an early version of the GPL interpreter that had only one speed setting, the slowest of the five settings available with the 9640. This setting is referred to as the TI mode on the Geneve and is used only to run existing TI software on the 9640.

I hope this is perfectly clear.

WHAT'S INSIDE

This edition of MICROpendium could well be referred to as our "games edition." Included are a poker solitaire game by Regena and a complicated jumping game called Intruder. Together these programs take up about ten pages of space. We've expanded to 56 pages this month to get everything in (actually, we've managed to cram in everything that fits.)

BUYERS BEWARE

We've received some negative comments about a number of companies serving the TI marketand we'd like to share them with you.

Order 99 has been having problems delivering products to purchasers. The company has moved from San Antonio to St. Louis, Missouri. However, owner James Kaster assures us that the move and the problems are not associated with a desire to ripoff purchasers. He says he's been the victim of several medical problems over the past several months and still hasn't recovered. Although the company doesn't have a phone number at this time (Kaster has an unlisted number which we were unable to obtain), he may be reached at 3512 Sun Lake Dr., St. Charles MO 63301-3013. He says that as soon as he's back on his feet he'll be back in business. Order 99 is a former MICROpendium advertiser.

We've received numerous complaints about Ryte Data, of Haliburton, Ontario. The complaints range from failure to fulfill orders to extremely slow service. Ryte Data has stopped responding to inquiries from MICROpendium, written as well as by telephone. Ryte Data advertised in MICROpendium last year.

The National 99 User Group out of Florida has apparently disconnected its phones. We've received a number of complaints from those who have tried to purchase products from this company. The company advertised in MICROpendium several years ago.

Who can you trust? Anyone who is advertising in MICROpendium is okay with us. The only exceptions to date are those mentioned above.

WHAT'S HAPPENING WITH SECOND CLASS

We're moving toward second class handling by the post office for MICROpendium. We've applied for the permit starting with this edition (the fact that it is 56 pages has been an incentive). This means that the magazine is being delivered via second class mail. All first class subscribers will have their subscriptions extended to compensate for this new delivery rate.

We've had only one subscriber cancel his subscription as a result of this, but he also indicated that he was disappointed in the review of the Brain published in the August edition. He alleged that there was some connection between the review and the fact that the company that sells the program ran a quarter page ad in that edition. He thought the program got good grades because of the ad. Not so. We paid the reviewer more for his review than we received for the ad. The review was published because a number of readers asked us to review the Brain. The grades aren't determined by MICROpendium but by the reviewer. In fact, I do not agree with the conclusions of all reviews published in MICROpendium. However, we won't ask reviewers to change their opinions of a product to suit me, nor would we change a grade to suit an advertiser. That's the way it is, and should be.

—JK

Reviewed in MICROpendium

1984

February: B-1 Nuclear Bomber, Tandon TM-100 Disk Drive, Void, Beanstalk Adventure, Microsurgeon, On Gaming, Database 500.
March: Star Trek, Escape From Balthazar, Garkon's Getaway, Sky Diver, Mail-Call, Prowriter 8510 Printer.
April: Monthly Budget$ Master, Budget Master, Home Budget, Thief, Donkey Kong, Khe Sanh.
May: Companion Word Processor, Q*Bert, Mad-Dog I & II, Programs for the TI Home Computer.
June: Creative Expressions Accounts Receivable/Accounts Payable, CDC 9409 Disk Drive, Starship Concord, Lost Treasure of the Aztec, ASW Tactics II.
July: Theon Raiders, Introduction to Assembly Language for the TI Home Computer, Game of Wit, Pole Position
August: TE-1200, Tower, Galactic Battle, Galaxy
September: Wycove Forth, 99/4 Auto Spell-Check, QUICKCOPYer, Wizard's Dominion, Anchor Automation Mk XII Modem
October: Killer Caterpillar, ZORK I, Defender
November: 9900 Disk Controller Card/Manager, Super Bugger, Transtar 120S printer, Floppy-Copy, Data Base-X
December: Gravity Master, Data Base Manager System, Learning 99/4A Assembly Language Programming

1985

January: Super Sketch, Foundation Computing 128K Card, PTERM-99, TI-Runner
February: Super Extended BASIC, Beginning Assembly Language for the TI, ZORK II
March: Morning Star Software CP/M Card, WDS/100 Winchester Disk Drive, Sketch Mate, BMC Color Monitor
April: 9900 Micro Expansion System, Disk+Aid, Gemini 10X-15X
May: Character Sets and Graphics Design, Draw 'N Plot
June: GRAPHX, DATA BASE I
July: Acorn 99, Advanced Diagnostics
August: Model Dow-4 Gazelle, TI-Artist, PC-KEYS, Not-Polyoptics' Bankroll
September: Midnite Mason, Myarc 32K/128K Card, GRAPHX Companion
October: 4A/TALK, Extende BASIC II Plus, XB Detective, Console Writer 2.a
November: Foundation Z80A/80-column cards, 9900BASIC, Adventure Editor
December: Display Enhancement Package, Triple Tech

1986

January: BITMAC, Starcross
February: Night Mission, Peripheral Diagnostic Module, BA-Writer
March: Super Duper, Tunnels of Doom Editor, Business Graphs 99
April: U.S. Open Tennis, PRBASE
May: 4A Flyer, GRAM Kracker, Artist's Companion
June: Myarc Disk Controller Card, Maximem
July: Horizon RAMdisk, Old Dark Caves, Funlwriter, TI99/4A Macro Assembler
August: JOYPAINT 99, GPL Assembler, TI99/4A Intern, GPL Linker
September: Mechatronic 128K Card
October: TI-Forth Utilities, CorComp Memory Plus
November: Submarine Commander, PEP, MAX-RLE
December: GK Utility I and II and GRAM Packer, X-10 Powerhouse, RAVE 99/101

1987

January: MG DISkASSEMBLER, Myarc XBII
February: TI-Tax, Mechatronic Mouse
March: Wycove Forth version 3.0, DIJIT Systems RGB Conversion Kit, Spad XIII Flight Simulator
April: Geneve 9640, Disk Utilities
May: QS-Solitaire, Geneve 9640 (Part 2), Technical Drive, Console Calc
June: Character Sets and Graphic Design III, Writerease Ver. 1.1, 4A DOS, Prescan_It
July: Junkman Junior, Avatex 1200/1200hc modem, Bubble Plane
August: Prostick, The Brain, Rocketman, Menu Ver. 6.3
September: TI-IBM Connection, Super Extended BASIC
October: Fontwriter, Mechatronic 80-Column Card, Star NP-10 Printer

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Feedback

Mini-Memory notes

I don't know how many people have had this problem, but the line-by-line assembler that I received with the Mini-Memory module has a bug with the OLD assembler option. According to the instructions, when OLD was selected the assembler was to retain the symbol table from the last program you were working on, and the program counter was to be where it was when you left off last time. This would never happen for me — both OLD and NEW worked just like the NEW command. I don't know how many hours I wasted, thinking that I was doing something wrong, trying to get OLD to work, until I called TI about a year ago to ask them about this problem. They gave me the "patches" to fix the program from Easy Bug.

First, with the MM module inserted, select Easy But, press any key, then press L to load your line-by-line assembler.

After you have loaded in the assembler, still in Easy Bug, enter M71A9. There should be >3E stored there. Enter 80 and then press enter.

Press enter five times until location >71AF comes up. Change this >3E to >80 also, then press enter.

Press the period key, then enter M7229. Change the >3E to >80 and press enter. Press the period, then S to save your repaired assembler to a different tape. Save locations >7000 through >7FFF. After this, your line-by-line assembler should work as described in the manual.

One point in your recent MM article needs to be clarified. The way TI uses string data is not "stupid" and "totally senseless" as stated in the article. Any string passed between your assembly sub and BASIC, either way, is a simple ASCII string. Nothing is added or subtracted. The problem comes in when you want to display a string from your assembly sub. Then you must add >60 (decimal 96) to each byte displayed. Or if you want to read text from the screen in your assembly sub you should subtract >60 from each byte. The reason for this is to save precious memory. Both the screen image table and the pattern descriptor tables start at VDP location >0000. So now the screen, color and sprite tables and some system variables are using the memory where the patterns for characters 0-95 would be stored. To get past these items TI loads the definitions for the characters starting at character 30+96 (character 126 to the VDP) and anything displayed to the screen has to have this bias taken into account. This is in effect only from the BASIC environments.

Brad Snyder
Palmerton, Pennsylvania

Clarification added

Thank you for printing my letter on escape sequences for the Axiom GP-100TI printer in your September issue. However, I found a few items needing clarification.

In the ESCAPE SEQUENCE table, the first line should start with 27; 65 (not with 26;75). Also, the parameters in the fourth sequence are not clearly defined. N1 equals INT(N/256) and N2 equals N-N1*256. Finally, in the fifth sequence, N equals 2 for graphic mode and N equals 3 for text mode.

Also, it is stated in the second paragraph following the table that the double width font is an exclusive to the GP-100TI. This is incorrect. Most printers have double width capability, the 100TI included. What was intended was to note the unique capability for double height printing of both standard and double width characters.

Line 190 in the program for emulating emphasized print should read:

```
190 PRINT #1:TAB(9);B$;CHR$(32);MSG$;A$;CHR$(10)
```

These clarifications are probably unnecessary for most of your readers. However, as indicated by some of the feedback letters in past issues, a few new TI users out there may benefit from the comments.

Boyd Shugert
Portsmouth, Ohio

Another way

I slipped up!

The paragraph just before Example 3 in the September 1987 c99 column is quoted:

"The next example is meant to show how the comparisions are made in the **if condition**). If we wish to compare a character stored in variable **a** to the letter **M**, we cannot say **if(a==''M'')** of **if(a=''M'')** as in BASIC. We must compare the character stored in **a** to the ASCII value of the letter **M;** thus, **if(==77)** of **if(a<=77).**"

From the way I wrote this it implies that there is no other way. There is, and I should have said so. The comparison can also be made **if(a=='M')** or **if(a=<'M')**, for the single (not double) quote marks before and after a character give the ASCII value. This method is taken up in the October column, but should have been mentioned here.

Someone might write in and say that **putchar(a);** in Example 3 is an error. This is generally written **a=putchar(a);** but it works either way.

Charles E. Kirkwood Jr.
Clemson, South Carolina

Socket, not the plug!

Re my User Note Page 45 (Oct. '87):

Please note that the DIN pictures depict the *socket* not the plug on the cable! You will usually see the pin numbers printed on the back of the plugs, inside the shell. A DIN plug is the inverse order of a DIN socket, so be twice as careful that correct pins are used!

I do so much of this, I sometimes think things like this are "obvious" and take them for granted.

Mike Christianson
Pekin, Illinois

Getting garbage

In the August edition you snapped a comment on how great the new CorComp cartridge "TI/IBM Connection" was for you in relation to your teletype operation. I was enthusiastic as I have a need to convert a huge set of nutritional programs and data that I have written over the past four years into IBM PC format. I ran out and purchased it.

Lo and behold the September issue has a whole review on PC Connection. I had to reread the whole article before I recognized that either you or Corcomp had renamed the program.

I wrote to CorComp and received an answer from Jackirae Sagouspe stating they did not understand my statement that when I had completed the conversion of the TI program to a PC formatted disk I still had garbage.

Your review did not totally address the

(See Page 10)

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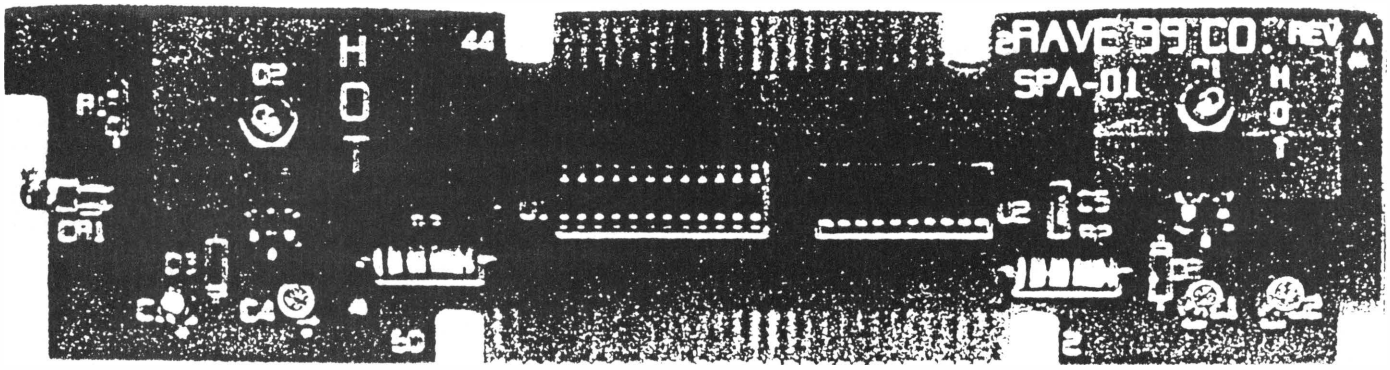

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Feedback

(Continued from Page 8)

basics. Granted you are publishing to sophisticated users of the TI but somehow you are still obligated to us "Extended BASIC Tinkers."

For one: I had to search hard until my local TI distributer (Pilgrims Pride) advised that to convert an Extended BASIC program into D/V80 (as you put it) requires the comment "list "dsk1.myfile" ".

Of course, you now have a program in TI-Writer format.

I took this action and "listed" my first program, "MEAL#1". It was great! I could now bring the program up in TI-Writer and do whatever I wished.

But I didn't wish to do anything except make it work on an IBM PC. I followed the simple directions to transfer it to an IBM formatted disk (which I had to have my friend Pilgrims Pride make up for me as I do not yet own an IBM unit).

"Garbage" is exactly what I now have. As I asked CorComp, "Is this another suck on for additional manuals or programs at an additional expense or I am missing the point?"

Since it is obvious that the TI program will not run on the IBM, what do I do next?

Who is publishing directions to convert the D/V80 on the IBM disk into programmable format? How do I convert:

OPEN #X:"DSK1.XXX",REM,LEN$,SEG$,PRINT #1,PRINT #2

AND as you said, how about some clarity on transferring data files? Needless to say, reversing the procedure results in the same garbage.

I have the CorComp 9000 system and the conversion did take a 48K program; since I can't run it, I can't verify that.

Your August article sucked me in and CorComp stuck it to me.

Roy R. Roiman
Hatboro, Pennsylvania

Yes, we called it by a name used in advertising rather than TI/IBM Connection. As for converting programs, the review repeatedly stated that TI/IBM Connection converts text files. No mention of program conversions was implied or made. In fact, there are no programs that will convert a BASIC program written for one computer for use by another. —Ed.

Comments on c99

I'm writing in regards to Mr. Kirkwood's c99 column in the September 1987 issue where he discusses variable names. I would like to clarify a few points made in the article that might be misleading.

1) "Variables in c99 consist of letters and digits." Actually, variables can be upper or lower-case letters, digits, and the underscore (—). A great many C programs and books frequently use the underscore to separate words in a variable, like f—name for "first name." Function names follow the same naming conventions as variables. Also note that the compiler differentiates between upper- and lower-case names; therefore, f—name and F—NAME are two different variables.

2) Almost all "built-in" functions in c99 return some kind of value, like getchar() and putchar(). The statement "a=getchar()" means execute the function getchar(), and store the value it returns in the variable "a." Oftentimes the value returned from a function can be ignored if you don't need it. For a function like getchar(), you NEED the value to find out what key has been pressed. But the author also uses the statement "c=putchar(10)". In this case, you don't need the returned value (since it just returns the value you gave it, 10). You can thus omit the "c=" and just use "putchar(10)." The returned value is just discarded by the compiler if you don't explicitly store it somewhere. As an example, you might want the user to hit a key, but you don't care what key. In this case, just use "getchar()" and the program will wait for a keypress and discard the keycode.

3) The author says "If we wish to compare a character stored in variable "a" to the letter M, we cannot say if(a=="M") as in BASIC." Well, not quite true. You can compare an integer variable to the letter M, just use single quotes instead of double quotes, like: if(a=='M'). You could even say "if(77=='M')", where 77 is the ASCII code of 'M', which will always be true. The point is that the author asserts that you cannot compare an integer (like the integer variable "a") to a character (like 'M'). The fact is that the compiler converts all characters to INTEGERS internally. So by saying "if(a=='M')" you are in effect saying "if(a==77)."

4) Finally, related to number 3, the author states that the declarations "int a,b,c" could be replaced by "char a,b,c" in his examples, but he doesn't explain WHY, which is important. The two functions he uses are putchar() and getchar(), which have something to do wih characters, ie. printing them or retrieving them. So it's only logical to store such values in char-type variables. However, as c99 stands right now, functions can only return integer, not character results. That's why the author uses int's in his examples. So how can you say "char a; a=getchar();" when getchar() returns an integer, not a character? Because as I stated before, internally, all characters are converted to integers. All the compiler sees is virtually a bunch of integers and integer variables. All this means is that for comparisons, etc, you can treat char variables as int variables, but only when you have to. To follow standard C, you should whenever possible use char variables to store characters, and int variables to store integers. This just goes to show you that even though c99 might be limited, there are always ways around those limitations. Since there are a great many books and articles written about C in general, I think it important to point out how c99 differs from standard C, to help the beginner when he goes to the bookstore in search of help.

Warren Agee
Detroit, Michigan

Weird designs

I have a great deal of trouble with my TI Extended BASIC cartridge. Almost every time I insert it and press 2 for Extended BASIC, I get nothing but weird designs and colors on the scrfeen. The QUIT function doesn't work so I must turn the computer off and on manually while I remove and reinsert the cartridge. Often I have to do this dozens of times before I finally get the cursor and can proceed. Do I just have a faulty cartridge or do others have similar problems?

Shirley Kulzick
New Berlin, Wisconsin

Sounds like a dirty GROM port or cartridge connectors. Remove oxidation from both with an eraser or non-metallic brush.

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BASIC

Poker Solitaire is a sure bet

By REGENA

My son and I have recently been spending (wasting) lots of time playing a public domain game on one of our other computers. It is called ''Poker Solitaire'' and is written in Pascal. We thought you might enjoy having a TI BASIC version.

A five-by-five grid is shown on the screen. A deck of cards is shuffled then dealt one at a time. The card dealt is shown at the bottom right section of the screen. You may choose to place the card anywhere on the grid that is not already occupied. The object is to try to arrange the cards to make a good poker hand in each row and in each column. Once you put a card in place it cannot be moved. Use the arrow keys (E, S, D, X) to move the blinking cursor to the position you want, then press the ENTER key. Repeat the process for all 25 cards.

The scoring is shown at the right of the screen. A ''Flush'' means all five cards are the same suit. A ''Straight'' is five cards whose numbers can be arranged in consecutive order (such as 5, 6, 7, 8, 9). Our original game allowed the Ace to be the high card in a straight, but the Ace could not be the low card. However, in this game, the Ace may be high or low. In other words, a straight may consist of A, 2, 3, 4, 5, or 10, J, Q, K, A. A ''Straight Flush'' is five consecutive cards in the same suit.

''Four of a Kind'' means four cards of matching numbers (one in each suit). ''Three of a Kind'' means three cards of matching numbers; ''1 Pair'' means two cards have matching numbers; ''2 Pair'' means that of the five cards, two of the cards have matching numbers and two more of the cards have matching numbers. A ''Full House'' consists of one pair plus three of a kind.

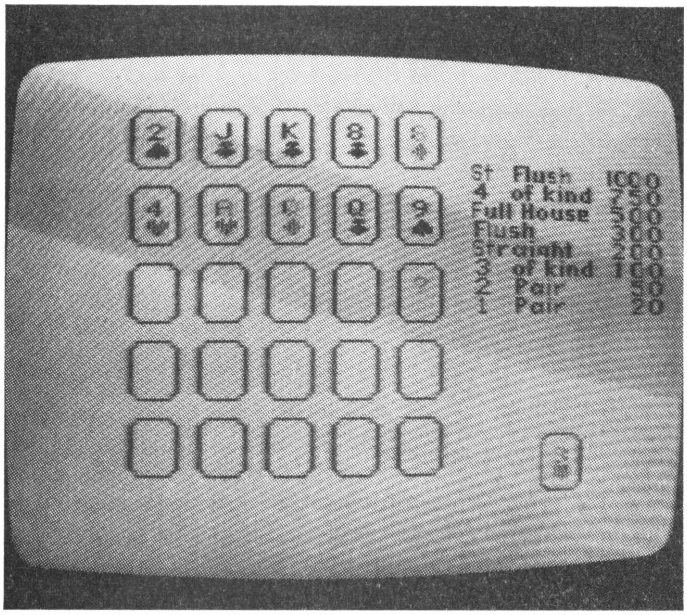
After you have placed all cards on the grid, the computer will calculate the score for each row and the score for each column. These scores are added together, and the total score is printed at the bottom of the screen. Try to get as high a score as possible. I would say a score of over 2,100 is good. So far my high score is 3,440 — and that was getting a zero on one of the rows. Anyway, have fun beating that.

Line 150 DIMensions several variables. A(13,4) is an array used for the 13 numbers and 4 suits for the cards. Lines 790-830 initialize the elements in the array to be zero at the beginning of each game. Lines 960-970 set the element chosen to be 1 when a random card is chosen. This method prevents duplicate cards from being chosen.

CARD(r,c,l) is the card number for a card placed in a certain row r and column c. CARD (r,c,2) is the suit number. The D(n) array is used to keep track of the numbers of the five cards in determining the score. CX(n) and CY(n) are the coordinates of the cards in the grid. CRN(1) and CRN(2) are character numbers for the red and blue numbers and suits. Line 1830 determines which character number to use for the card number — black or red.

The regular numbers in black are the usual characters starting at ASCII Code 50. However, after ''9'' characters are redefined for 10, J, Q, K, and A. The numbers in red are defined in characters starting with character number 128. Characters are also redefined to print the scoring table and the card outlines.

Most of the characters are defined in lines 270-400. If you have trouble running this program, the most likely place for typing errors in in the DATA statements. These numbers are all character definitions (often 16 digits long). Notice that line 370 ends with two characters defined as null strings. They happen to be characters not used in a black set. The next line starts data for characters that will be in a different color set for red. Lines 410-420 define the red color sets.



You will need to release the Alpha Lock key to type the PRINT statements in lines 490-650. The lowercase letters are PRINTed on the screen but have been redefined to print the scoring table. The CALL HCHAR statements add a ''0'' to the printed lines in the scores.

Lines 660-750 draw the ''empty'' cards in five rows and five columns on the screen. Lines 760-780 draw the outline for the single card to be dealt. Subroutine 1660-1740 is the procedure for drawing the outline of one card.

Lines 920-1290 contain the FOR-NEXT loop that deals the 25 cards. Lines 930-970 randomly choose a card number and card suit and make sure the card has not previously been chosen. Line 980 calls the subroutine 1750-1840, which determines the color, the suit character number and the card number. Lines 990-1000 draw the card in the lower right corner.

Lines 1010-1230 receive the user input of moving the blinking cursor (question mark) with the arrow keys. When the ENTER key is pressed, line 1240 makes sure another card is not already in that position. If the spot is available, lines 1250-1260 draw the card number and suit on the screen, and lines 1270-1280 define that card in the array. After all the cards have been placed, lines 1300-1310 erase the last card.

Line 1320 initializes the total score. Lines 1330-1540 look at the cards row by row then column by column to determine the score and print the scores. The subroutine 1900-2410 checks the suits and the numbers of the cards for the possible score. The subroutine 2420-2570 prints the score. Lines 1530-1580 print the total score.

(See Page 14)

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POKER SOLITAIRE—

(Continued from Page 12)

Lines 1590-1640 print the option to play the game again, and the user presses Y for yes and N for no. The program then branches appropriately. The subroutine 1850-1880 is used to print a message T$ without scrolling. Lines 2580-2600 clear the screen, print the total score, and end the program.

If you want to improve efficiency in the scoring, you can combine comparisons in IF-THEN statements. TI Extended BASIC allows several combinations in IF-THEN statements that would make these combinations more understandable. Extended BASIC also facilitates printing on the screen.

Our 32-column screen makes this game a little difficult because all the printing needed to fit within those columns. Many of the character definitions were to make smaller letters so the scoring table would fit. Each card is three characters wide with the number and suit printed in the center column (one character wide).

If you prefer to save typing effort, you may have a copy of this game by sending a blank cassette or diskette, $3 copying fee, and a stamped, self-addressed mailer to* REGENA, P.O. Box 1502, Cedar City, UT 84720.** ***Be sure to specify that you need the TI version of "Poker Solitaire."

POKER SOLITAIRE

```
100 REM POKER SOLITAIRE !039
110 REM BY REGENA !071
120 CALL CLEAR !209
130 PRINT TAB(6);"POKER SOLI
TAIRE" !219
140 OPTION BASE 1 !137
150 DIM A(13,4),CARD(5,5,2),
D(5),CX(5),CY(5),CRN(2)!128
160 CALL CHAR(58,"008E919191
91918E")!033
170 PRINT : :"CARDS WILL BE
DEALT ONE AT" !148
180 CALL CHAR(59,"0004040404
044438")!221
190 PRINT :"A TIME.  MOVE BY
 USING THE" !201
200 CALL CHAR(61,"0044485060
504844")!231
210 PRINT :"ARROW KEYS, THEN
 PLACE THE" !026
220 CRN(1)=48 !062
230 PRINT :"CARD BY PRESSING
 <ENTER>." !215
240 CRN(2)=126 !109
250 PRINT : :"MAKE POKER HAN
DS BOTH" !124
260 PRINT :"HORIZONTALLY AND
 VERTICALLY." !035
270 FOR N=96 TO 142 !228
280 READ N$ !009
290 CALL CHAR(N,N$)!103
300 NEXT N !228
310 DATA 0003026297929262,00
04840405060504,0010009213121
292,0001018749494947,0062928
762129262 !158
320 DATA 007A424272424242,00
00004949494879,000808CB0DC94
9C9,007088888888887,0000002C
3020202 !193
330 DATA 0001006999899969,00
00001C24243C040C,008282A7D29
29292,007048487141414,000200
D2321232D2 !060
340 DATA 000000586040404,00F
08084E4848483,00121292929292
92,000909090F090909 !233
350 DATA 0000001824242418,00
00009392939073,0000009E129E9
09E !065
360 DATA 000000030408101,000
000FF,000000804020101,101010
101010101,10080403,1020408 !
058
370 DATA 001C3E083E7F3E08,00
081C3E7F7F6B08,,"" !058
380 DATA 003844040810207C,00
38440418044438,00081828487C0
808,007C407804044438,0018204
078444438 !220
390 DATA 007C04081020202,003
8444438444438,003844443C0408
3,008E91919191918E,000404040
4044438 !118
400 DATA 0038444444544834,00
44485060504844,003844447C444
444,0036777F7F3E1C08,00081C3
E7F3E1C08 !101
410 CALL COLOR(13,7,1)!228
420 CALL COLOR(14,7,1)!229
430 PRINT : : : : :"PRESS <E
NTER> NOW TO START." !095
440 CALL KEY(0,K,S)!187
450 IF K<>13 THEN 440 !174
460 CALL CLEAR !209
470 CALL CHAR(60,"0038444444
544834")!237
480 CALL CHAR(62,"003844447C
444444")!253
490 PRINT TAB(20);"d efg  :0
" !021
500 CALL HCHAR(23,31,48)!054
510 PRINT TAB(20);"4 `abc 75
" !027
520 CALL HCHAR(23,31,48)!054
530 PRINT TAB(20);"pqrstu 50
" !233
540 CALL HCHAR(23,31,48)!054
550 PRINT TAB(20);"efg    30
" !202
560 CALL HCHAR(23,31,48)!054
570 PRINT TAB(20);"dijkl  20
" !101
580 CALL HCHAR(23,31,48)!054
590 PRINT TAB(20);"3 `abc 10
" !015
600 CALL HCHAR(23,31,48)!054
610 PRINT TAB(20);"2 mno   5
" !230
620 CALL HCHAR(23,31,48)!054
630 PRINT TAB(20);"1 mno   2
" !226
640 CALL HCHAR(23,31,48)!054
650 PRINT : : : : : : : : :
: : :!024
660 CH=117 !173
670 FOR XX=1 TO 5 !163
680 ROW=4*XX-3 !228
690 CX(XX)=ROW+1 !041
700 FOR YY=1 TO 5 !165
710 COL=3*YY+3 !202
720 CY(YY)=COL+1 !018
730 GOSUB 1660 !210
740 NEXT YY !072
750 NEXT XX !070
760 ROW=18 !233
770 COL=25 !205
780 GOSUB 1660 !210
790 FOR N=1 TO 13 !113
800 FOR S=1 TO 4 !069
810 A(N,S)=0 !185
820 NEXT S !233
830 NEXT N !228
840 FOR XX=1 TO 5 !163
850 FOR YY=1 TO 5 !165
```

(See Page 16)

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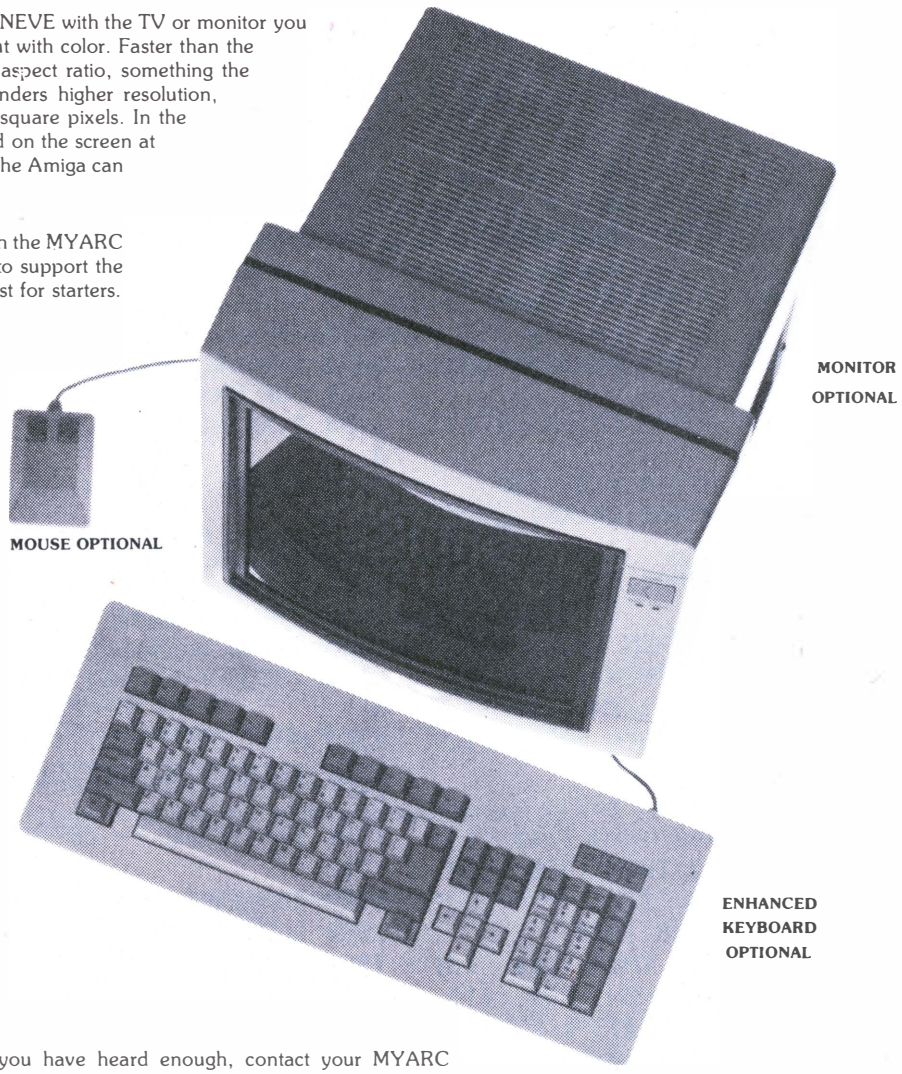

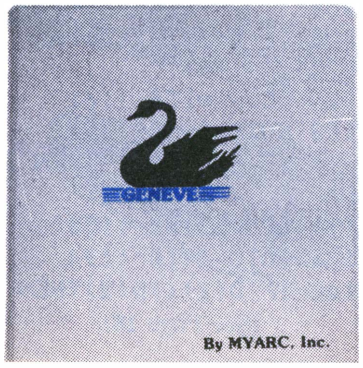

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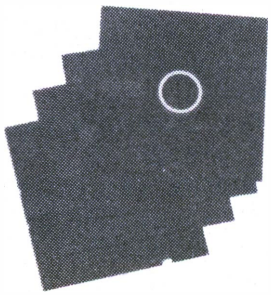

SOLITAIRE—

(Continued from Page 14)

```
860 CARD(XX,YY,1)=0 !000
870 CARD(XX,YY,2)=0 !001
880 NEXT YY !072
890 NEXT XX !070
900 XX=1 !104
910 YY=1 !106
920 FOR DEAL=1 TO 25 !060
930 RANDOMIZE !149
940 CN=INT(13*RND)+1 !014
950 CS=INT(4*RND)+1 !226
960 IF A(CN,CS)=1 THEN 940 !
236
970 A(CN,CS)=1 !064
980 GOSUB 1750 !044
990 CALL HCHAR(19,26,CNUM)!0
60
1000 CALL HCHAR(20,26,SUIT)!
070
1010 CALL SOUND(100,1200,2)!
172
1020 CALL GCHAR(CX(XX),CY(YY
),G)!092
1030 CALL KEY(0,K,S)!187
1040 CALL HCHAR(CX(XX),CY(YY
),63)!073
1050 CALL HCHAR(CX(XX),CY(YY
),G)!093
1060 IF S<1 THEN 1030 !019
1070 IF K=13 THEN 1240 !016
1080 IF K<>69 THEN 1120 !100
1090 IF XX=1 THEN 1030 !111
1100 XX=XX-1 !218
1110 GOTO 1010 !068
1120 IF K<>68 THEN 1160 !139
1130 IF YY=5 THEN 1030 !117
1140 YY=YY+1 !221
1150 GOTO 1010 !068
1160 IF K<>88 THEN 1200 !181
1170 IF XX=5 THEN 1030 !115
1180 XX=XX+1 !217
1190 GOTO 1010 !068
1200 IF K<>83 THEN 1030 !006
1210 IF YY=1 THEN 1030 !113
1220 YY=YY-1 !222
1230 GOTO 1010 !068
1240 IF CARD(XX,YY,2)>0 THEN
 1010 !245
1250 CALL HCHAR(CX(XX),CY(YY
),CNUM)!073
1260 CALL HCHAR(CX(XX)+1,CY(
YY),SUIT)!022
1270 CARD(XX,YY,1)=CN !152
1280 CARD(XX,YY,2)=CS !158
1290 NEXT DEAL !172
1300 CALL HCHAR(19,26,32)!05
6
1310 CALL HCHAR(20,26,32)!04
8
1320 TSCORE=0 !135
1330 SY=3 !102
1340 FOR ROW=1 TO 5 !235
1350 FOR YY=1 TO 5 !165
1360 D(YY)=CARD(ROW,YY,1)!17
8
1370 ST(YY)=CARD(ROW,YY,2)!0
22
1380 NEXT YY !072
1390 GOSUB 1900 !195
1400 SX=CX(ROW)!105
1410 GOSUB 2420 !205
1420 TSCORE=TSCORE+SCORE !15
5
1430 NEXT ROW !142
1440 SX=21 !150
1450 FOR COL=1 TO 5 !209
1460 FOR XX=1 TO 5 !163
1470 D(XX)=CARD(XX,COL,1)!14
8
1480 ST(XX)=CARD(XX,COL,2)!2
48
1490 NEXT XX !070
1500 GOSUB 1900 !195
1510 SY=CY(COL)-1 !013
1520 GOSUB 2420 !205
1530 TSCORE=TSCORE+SCORE !15
5
1540 NEXT COL !116
1550 TSCORE$=STR$(TSCORE)!20
2
1560 T$="TOTAL -- "&TSCORE$
!208
1570 ROW=23 !229
1580 GOSUB 1850 !145
1590 T$="PLAY AGAIN? (Y/N)"
!074
1600 ROW=24 !230
1610 GOSUB 1850 !145
1620 CALL KEY(0,K,S)!187
1630 IF K=78 THEN 2580 !093
1640 IF K=89 THEN 460 ELSE 1
620 !178
1650 STOP !152
1660 CALL HCHAR(ROW,COL,CH+1
)!191
1670 CALL HCHAR(ROW,COL+1,CH
+2)!123
1680 CALL HCHAR(ROW,COL+2,CH
+3)!125
1690 CALL VCHAR(ROW+1,COL,CH
+4,2)!057
1700 CALL VCHAR(ROW+1,COL+2,
CH+4,2)!245
1710 CALL HCHAR(ROW+3,COL,CH
+5)!128
1720 CALL HCHAR(ROW+3,COL+1,
CH+2)!056
1730 CALL HCHAR(ROW+3,COL+2,
CH+6)!061
1740 RETURN !136
1750 IF CN>1 THEN 1770 !056
1760 CN=14 !126
1770 IF CS>2 THEN 1810 !103
1780 SUIT=123+CS !187
1790 SUITC=1 !064
1800 GOTO 1830 !124
1810 SUIT=138+CS !193
1820 SUITC=2 !065
1830 CNUM=CN+CRN(SUITC)!027
1840 RETURN !136
1850 FOR K=1 TO LEN(T$)!250
1860 CALL HCHAR(ROW,2+K,ASC(
SEG$(T$,K,1)))!083
1870 NEXT K !225
1880 RETURN !136
1890 REM CHECK SUIT  !189
1900 SCORE=0 !051
1910 FOR K=1 TO 4 !061
1920 IF ST(K)<>ST(K+1)THEN 1
960 !164
1930 NEXT K !225
1940 SCORE=300 !152
1950 REM SORT !034
1960 SW=0 !097
1970 FOR K=1 TO 4 !061
1980 IF D(K)<=D(K+1)THEN 203
0 !034
1990 DD=D(K)!066
2000 D(K)=D(K+1)!113
2010 D(K+1)=DD !253
2020 SW=1 !098
2030 NEXT K !225
2040 IF SW=1 THEN 1960 !014
2050 REM CHECK SCORE !212
2060 IF D(2)<>D(3)THEN 2210
!127
2070 IF D(3)<>D(4)THEN 2140
!059
2080 IF D(1)<>D(2)THEN 2110
!025
2090 SCORE=750 !161
2100 GOTO 2410 !194
2110 IF D(4)=D(5)THEN 2090 !
074
2120 SCORE=100 !150
2130 GOTO 2410 !194
2140 IF D(1)<>D(2)THEN 2180
```

(See Page 18)

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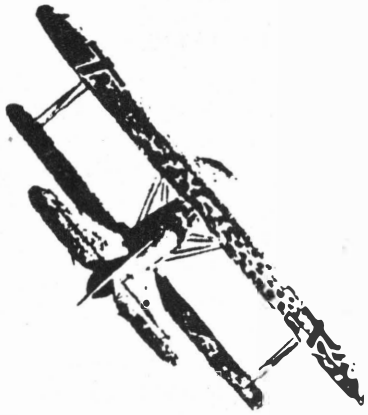

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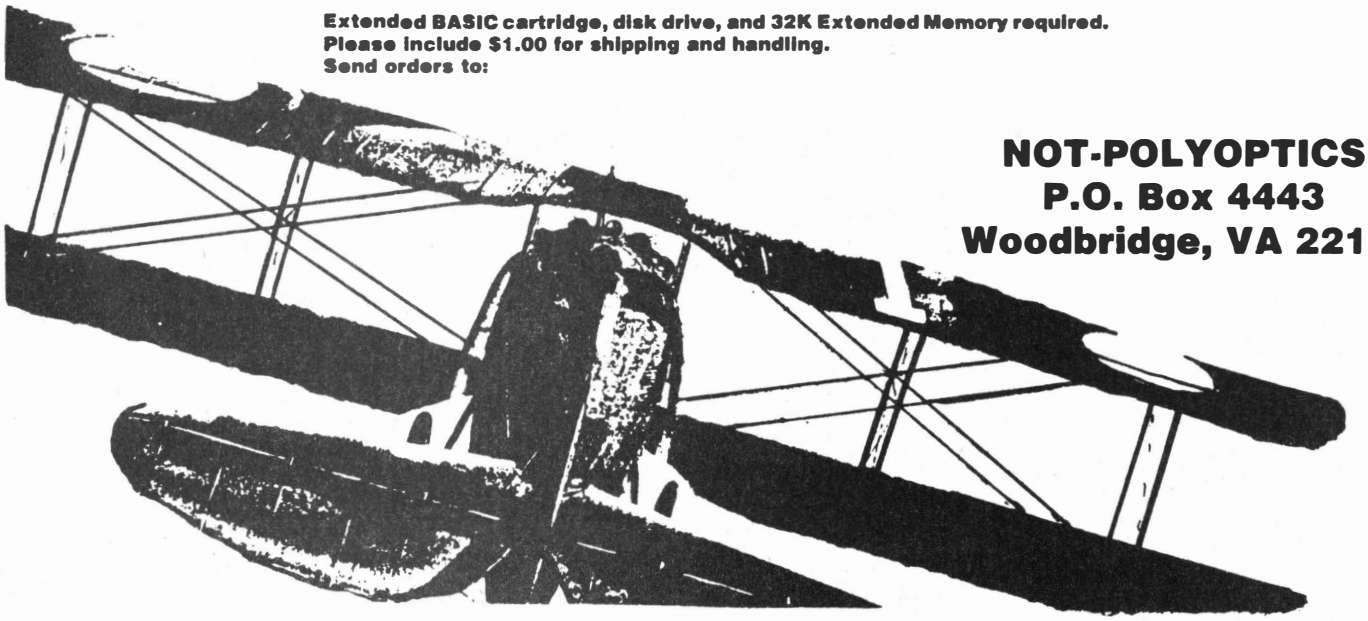

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SOLITAIRE—

(Continued from Page 16)

```
!095
2150 IF D(4)<>D(5)THEN 2120
!041
2160 SCORE=500 !154
2170 GOTO 2410 !194
2180 IF D(4)=D(5)THEN 2240 !
224
2190 SCORE=20 !102
2200 GOTO 2410 !194
2210 IF D(3)<>D(4)THEN 2270
!189
2220 IF D(4)=D(5)THEN 2260 !
244
2230 IF D(1)<>D(2)THEN 2190
!105
2240 SCORE=50 !105
2250 GOTO 2410 !194
2260 IF D(1)=D(2)THEN 2160 E
LSE 2120 !036
2270 IF D(1)=D(2)THEN 2360 !
083
2280 IF D(4)=D(5)THEN 2190 !
174
2290 IF D(5)-D(1)=4 THEN 237
0 !031
2300 IF D(1)=2 THEN 2340 !14
2
2310 IF SCORE=300 THEN 2410
!008
2320 SCORE=0 !051
2330 GOTO 2410 !194
2340 IF D(5)<>14 THEN 2310 !
105
2350 IF D(4)=5 THEN 2370 ELS
E 2310 !011
2360 IF D(4)=D(5)THEN 2240 E
LSE 2190 !192
2370 IF SCORE=300 THEN 2400
!254
2380 SCORE=200 !151
2390 GOTO 2410 !194
2400 SCORE=1000 !199
2410 RETURN !136
2420 C1=32 !097
2430 C2=32 !098
2440 IF SCORE<1000 THEN 2480
 !126
2450 C1=58 !105
2460 C2=48 !105
2470 GOTO 2540 !068
2480 IF SCORE<100 THEN 2520
!117
2490 C1=ASC(SEG$(STR$(SCORE)
,1,1))!222
2500 C2=ASC(SEG$(STR$(SCORE)
,2,1))!224
2510 GOTO 2540 !068
2520 IF SCORE=0 THEN 2560 !0
58
2530 C2=ASC(SEG$(STR$(SCORE)
,1,1))!223
2540 CALL HCHAR(SX,SY,C1)!11
0
2550 CALL HCHAR(SX,SY+1,C2)!
042
2560 CALL HCHAR(SX,SY+2,104)
!022
2570 RETURN !136
2580 CALL CLEAR !209
2590 PRINT "TOTAL SCORE --";
TSCORE: : : :!099
2600 END !139
```


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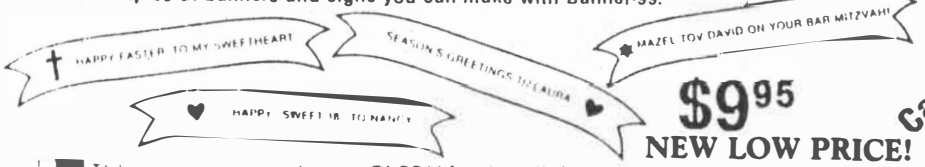

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The trials of a c99 beginner

More on loops and arrays

By CHARLES E. KIRKWOOD JR.

This month's topic will continue loops and arrays, which were introduced last month. A program to print out all combinations of 5 or 6 characters is given to illustrate nested loops and compound ifs. For the puzzle fan, this program can be helpful in unscrambling the word puzzles in the newspaper. And it's fast!

Now might be a good time to pick up on some loose ends. After DSK1.C99C has been selected to compile a program, the prompt **Include c-text? [n]** appears. So far the response has been to press <ENTER> which results in **n** being entered. By making the response **y** or **Y** the source code (your c99 program) will be entered as comments in the output file. In that way you can print out the assembly code from the diskette and see what was generated by each of the c99 statements. The second prompt is **Inline push code [n].** The normal method is to answer this with **n** in which fewer instructions are generated. However, if maximum performance is required, answer with **y** or **Y**.

You must remember that c99 is a subset of the C language. And as such, all the features that are available in the C language are not necessarily available in c99. One of the ways to find out whether a feature is available is to experiment. One of the things that I discovered was that negative subscripts are possible. Negative subscripts are not allowed in FORTRAN or BASIC, but are allowed in PL/1. However, you cannot declare them in c99 as you do in PL/1, but must use a "trick" that was used in some algebraic languages before safeguards were installed to prevent subscripts from being out of bounds.

Negative subscripts are useful for certain types of problems. A dummy array is declared just before the array to be used, as **int d[10], a[11]** or **char d[10], a[11]**. Storage is reserved in consecutive memory locations in both arrays, one following the other. The array **d** (for dummy) will hold the values to which the negative subscripts of array **a** will access. The array **a** can now have subscripts from -10 to 10, because the element a[-1] has the same memory location as d[9], a[-2] has the same memory location as d[8], etc.

You may have noticed that in some of the previous examples the declarations have preceeded **main()** while in others they followed **main()**. Up to this point it has not made any difference whether they were before or after — more on that later.

But, I also discovered that in order to use negative subscripts it appeared the array declarations must be prior to **main()**. This is going to require additional exploration.

In order to find out what you can do with a language or what a computer will do, you must experiment. Who would have thought that the TI99/4A is capable of doing some of the things that users have made it do?

Example 1 is a little example to show that negative subscripts will work:

```
/*EXAMPLE 1*/
int d[10],a[11];
int b,c,i;
main()
{
  for(i=-10;i<=10;++i)  /*input into array a*/
  {                     /*from -10 through 10*/
    b=getchar();
    a[i]=b;
  }
  c=putchar(10);
  for(i=-10;i<=10;++i)  /*printout of array a*/
  {                     /*from -10 through 10*/
    b=a[i];
    b=putchar(b);
  }
  c=putchar(10);
  for(i=0;i<=9;++i)     /*printout of array d*/
  {                     /*from 0 through 9*/
    b=d[i];
    b=putchar(b);
  }
  for(i=0;i<=10;++i)    /*printout of array a*/
  {                     /*from 0 through 10*/
    b=a[i];
    b=putchar(b);
  }
}
```

Let me digress for a moment.

A number of years ago the microcomputer would not have been accepted in the business world. The computer had to be physically large and showy with flashing lights. It was not always bought because it was needed, but because the business down the street had one. It was a status symbol and a company had "to keep up with the Joneses." A company in Chicago had a small computer — physically large compared to microcomputers, but short on memory. They discovered that it did not have enough memory for the program that they wanted to write. The machine was a fixed-word machine and they also discovered that the machine language commands did not use up all the bits in the word. And so, by careful coding they were able to use these unused bits for additional storage.

It ran — a little slow — but it ran.

Now a salesman from a well-known computer company got into the act. He wanted to sell a larger machine. The company agreed to buy this new computer if the seller would rewrite their program for this new machine. Needless to say, there was no sale for no one knew just how this little machine was coded except the man who had coded the machine and he had probably forgotten (documentation has not always been a strong point).

You never know what a computer or a language is capable of until you try. (Note: Please do not ask me to prove this story for I only heard it at a meeting in the early 1960s when some computers were still coded in machine language.)

Here is a little problem for you to figure out using two additional ways of writing a **while** loop.

Problem 1: How many times will **John Doe** be printed by the

(See Page 22)

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C99—

(Continued from Page 20)

two methods?

```
/*1st method*/
int i;
main()
{
  i=1;
  while((++i)<=5)
    puts("John Doe\n");
}
```

```
/*2nd method*/
int i;
main()
{
  i=1;
  while((i++)<=5)
    puts("John Doe\n");
}
```

What is your conclusion as to what happens when ++i or i++ is used?

Here is another problem using the **for** loop.

Problem 2: How many times will **John Doe** be printed in each of these two methods?

```
/*method 1*/
int i;
main()
{
  for(i=1;i<=5;++i)
    puts("John Doe\n");
}
```

```
/*method 2*/
int i;
main()
{
  for(i=1;i<=5;i++)
    puts("John Doe\n");
}
```

What can you say about ++i and i++ in the **for** loop?

Many of you have probably solved the scrambled word puzzles in the daily newspaper. How many of you have ever been stumped trying to unscramble 5 or 6 letters? To show nested loops and ifs, a program to print out all possible orders of 5 or 6 characters will be written. But first, since this is a "how to" article, Example 2 will print out all orders of only 3 letters with some explanation. Compound if statements using the logical AND will be used. The logical operators in c99 are bit-by-bit or bitwise operators. The operators are & for AND, | for inclusive OR, and ^ for exclusive OR.

In last month's sort program the characters in the array were swapped. In this program, the subscripts of the array will be changed. The table shows how we want the indexes i, j, and k in nested loops to change values to produce the proper subscripts to print the six orders of the input characters. Suppose, in our example, the input is ABC. The letter A is stored in w[1], B in w[2], and C in w[3], and the letters will remain in these locations.

i	j	k	w[i] w[j] w[k]	output
1	1			
	2	1		
		2		
		3	w[1] w[2] w[3]	ABC
	3	1		
		2	w[1] w[3] w[2]	ACB
		3		
2	1	1		
		2		
		3	w[2] w[1] w[3]	BAC
	2			
	3	1	w[2] w[3] w[1]	BCA
		2		
		3		
3	1	1		
		2	w[3] w[1] w[2]	CAB
		3		
	2	1	w[3] w[2] w[1]	CBA
		2		
		3		
	3			

```
/*EXAMPLE 2*/
main()
{
  char w[4];
  char a,c;
  int i,j,k;
  puts("TYPE 3 CHARACTERS\n");
  i=1;
  while(i<=3)   /*input into w[1] w[2] w[3]*/
  {
    a=getchar();
    w[i]=a;
    ++i;
  }
  c=putchar(10);
  for(i=1;i<=3;++i)
  {
    for(j=1;j<=3;++j)
    {
      if(j!=i)
      {
        for(k=1;k<=3;++k)
        {
          if((k!=i)&&(k!=j))
          {
            a=w[i];
            a=putchar(a);
            a=w[j];
            a=putchar(a);
            a=w[k];
            a=putchar(a);
            c=putchar(10);
          }
        }
      }
    }
  }
}
```

A word needs to be said about **if((k!=i)&(k!=j))**. It is a bit tricky. To print out the three characters, the subscripts **i**, **j**, and **k** must all be different. And so **k** cannot be equal to either **i** or **j**. In BASIC this might be written like this:

```
140 FOR K=1 TO 3
150 IF (K=I) OR (K=J) THEN 170
160 PRINT W(I);W(J);W(K)
170 NEXT K
```

(See Page 24)

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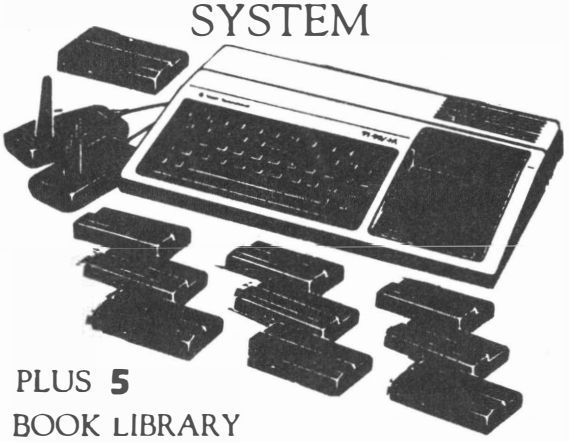

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c99—

(Continued from Page 22)

Note that in the BASIC program segment the PRINT statement is executed when the condition is *false*. However, since c99 does not have a GOTO, the condition must be *true* to print the results. We must come up with a condition with **i**, **j**, and **k** that is *true when* **K=I OR K=J** is *false*. After some experimentation it was found that **if((k!=i)&(k!=j))** did the job.

Here is another way you can write the input loop:

```
i=1;
while((i++)<=3)
{
  a=getchar();
  w[i-1]=a;
}
```

Example 3 will print out every order of either 5 or 6 letters. It is just a continuation of Example 2. Input either six letters or a space and 5 letters. The screen output will show 50 combinations of the letters and stop. Press <ENTER> in order to continue. Continue until all have been printed. As you read the screen, pick out the correct word.

```
/*EXAMPLE 3*/
main()
{
  char w[7];
  char a,c;
  int i,j,k,m,n,p,e,nc,r;
  puts("           SCRAMBLED LETTERS\n");
  puts("          By Charles Kirkwood\n\n");
  puts("TYPE 6 LETTERS ");
  puts("or A SPACE AND 5 LETTERS\n\n");
  i=1;
  while(i<=6)
  {
    a=getchar();
    w[i]=a;
    ++i;
  }
  c=putchar(12);
  nc=6;
  if(w[1]==32)
    nc=1;
  c=putchar(10);
  p=1;
  e=1;
  for(i=1;i<=nc;++i)
  {
    for(j=1;j<=6;++j)
    {
      if(j!=i)
      {
        for(k=1;k<=6;++k)
        {
          if((k!=i)&&(k!=j))
          {
            for(m=1;m<=6;++m)
            {
              if((m!=i)&&(m!=j)&&(m!=k))
              {
                for(n=1;n<=6;++n)
                {
                  if((n!=i)&&(n!=j)&&(n!=k)&&(n!=m))
                  {
                    for(r=1;r<=6;++r)
                    {
                      if((r!=i)&&(r!=j)&&(r!=k)&&(r!=m)&&(r!=n))
                      {
                        a=w[i];
                        a=putchar(a);
                        a=w[j];
                        a=putchar(a);
                        a=w[k];
                        a=putchar(a);
                        a=w[m];
                        a=putchar(a);
                        a=w[n];
                        a=putchar(a);
                        a=w[r];
                        a=putchar(a);
                        c=putchar(32);
                        c=putchar(32);
                        e=e+1;
                        if(e==6)
                        {
                          c=putchar(10);
                          e=1;
                          p=p+1;
                        }
                        if(p==11)
                        {
                          puts("press <ENTER>\n");
                          a=getchar();
                          c=putchar(12);
                          p=1;
                        }
                      }
                    }
                  }
                }
              }
            }
          }
        }
      }
    }
  }
}
```

Hope you will have fun with this program if you get stuck trying to solve the scramble word puzzles. This program was first written in FORTRAN several years ago, then in BASIC, and finally in c99. I know that there must be other ways — perhaps better ways — of doing this. It would be appreciated if you would let me know what methods you have used.

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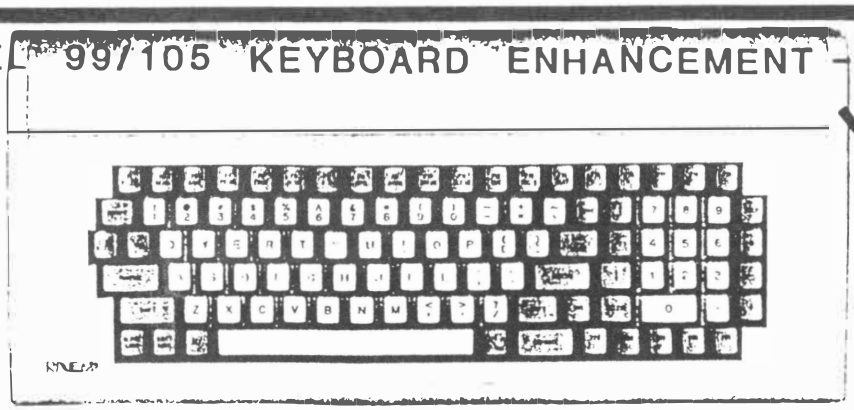

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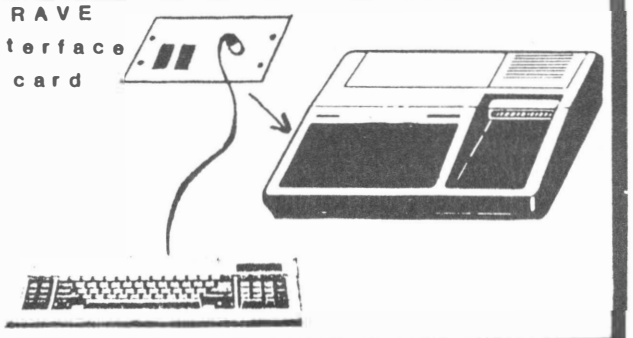


Intruder

Ride the conveyor but don't forget to get off

There's no point in trying to be cute with Intruder. We won't attempt to stimulate your imagination with references to life as a frog on the conveyor belt of life. It would take too many words to set the stage and, anyway, life as a frog may not be that good.

Intruder was written by Miles McManus, a student in computer science at the University of Texas-Austin. He wrote the game in 1983 but as far as we know it has never appeared anywhere beyond the classroom.

Programmed to run in Extended BASIC with expansion memory and a disk system (a color monitor or TV is recommended), Intruder consists of six program segments. Three are Extended BASIC programs named LOAD, HIPROG and FROG1. Three are files in Internal/Variable format called FROGDATA, KEEPHI and HISCORES. The programs were run through CHECKSUM. Don't include the checksums that appear at the end of each line. The I/V 80 FROGDATA file was written as a D/V 80 file using TI-Writer and converted to I/V 80 using a five-line program included below. The KEEPHI and HISCORES files were established using a modified version of the HIPROG program.

The object of Intruder is to manuever a frog up the screen by hurdling a variety of obstacles. Each screen consists of four levels of conveyer belts. After jumping from one end to the other, the frog must leap to a platform, turn about and then leap to the next conveyer. The process continues until the top level is reached and the frog pushes a switch that will load the next screen.

There are 13 screens, each one consisting of unique obstacles. As far as we can tell (we haven't been able to get beyond level four), the speed of the conveyers increases with each screen. The game starts with a supply of five frogs. An additional frog comes after scoring 700 points. More may be available with higher scores.

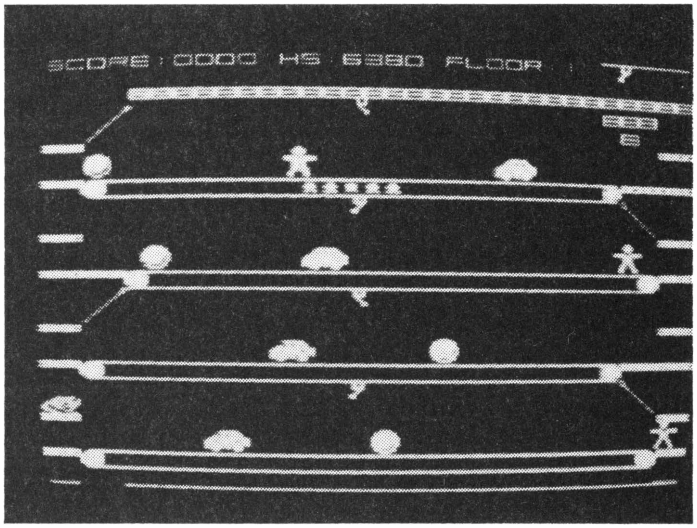
The program uses the W, E and D keys to jump from left to right and the P, O and K keys to jump from right to left. The W and P keys produce the largest jumps, the O and E keys produce moderate jumps and the D and K keys produce short hops.

To further complicate matters, the frog must push a switch set in the center of each conveyer in order to open hatches that would otherwise block entry to the next higher conveyer.

Oh yes, there's also a time limit. The time-keeper is a line at the bottom of the screen. If you fail to reach the top of the level before time runs out, the frog plummets to the bottom and you've got to start all over. Jumping into an obstacle also results in a ride to the bottom. Sound effects and graphics are used to signify splashes into the bottom of the pond. Reaching the top results in a musical salute before the next screen is loaded.

PROGRAMMING NOTES

Enter the LOAD, FROG1 and HIPROG programs as they appear (minus the checksums). Enter the FROGDATA file using a word processor exactly as it appears in the listing. (Do not include carriage returns or linefeeds at the end of any line.) Then you'll need to enter control characters after each of the @ signs. Assuming you are using TI-Writer to enter the file, press CTRL



U and leave the Alpha Lock down (or the caps lock key on the 9640). Then, beside each of the @ signs, starting with the three after The Dining Room, enter these characters. Of course, the actual characters you see on the screen will be different from the characters listed below but these are the keystrokes you use to produce the correct control characters:

The Dining Room	The Sphere Room
P222222	G222222
J222222	I222222
M222222	J222222
The Arrow Room	The Alien Room
I222222	L222222
F222222	N222222
C222222	E222222
The Appliances Room	The Hurdle Room
K222222	E222222
F222222	G222222
C222222	L222222
The Clothing Room	The Cube Room
M222222	C222222
E222222	M222222
G222222	D222222
The Pyramid Room	Bronze Room: Code Blue
F222222	G222222
E222222	G222222
H222222	G222222
The Food Room	Silver Room: Red Alert
I222222	O222222
P222222	O222222
G222222	O222222
The Sphere Room	The Vault: Gold Room
G222222	L222222
I222222	L222222
J222222	L222222

(See Page 28)

INTRUDER—

(Continued from Page 26)

Having entered the control characters and after saving the file in DV/80 format (using a name other than FROGDATA), input the following conversion program.

```
100 REM DV/80-IV/80 CONVERTE
R
110 OPEN #1:"DSK1.FROGGY",SE
QUENTIAL,DISPLAY ,VARIABLE 8
0
120 OPEN #2:"DSK1.FROGDATA",
SEQUENTIAL,OUTPUT,INTERNAL,V
ARIABLE 80
130 LINPUT #1:A$
140 PRINT #2:A$
150 IF EOF(1)=0 THEN 130
160 CLOSE #1 :: CLOSE #2
170 END
```

This converter may be adapted for use with other file types by modifying the file characteristics in lines 110 and 120. Also, it may be necessary to change LINPUT to INPUT when converting other formats. Run the converter. It will convert the D/V80 text file into an I/V80 binary file.

ESTABLISHING HISCORE AND KEEPHI

The HIPROG program is used to initialize the file used to record and keep track of the high score. The KEEPHI file will be created when you actually play Intruder for the first time.

You'll need to temporarily REM out a few lines in HIPROG to use it to start the HISCORES file. HIPROG writes the file in I/V80 format, so there's no need to do a conversion. The lines to REM out are 30-101, 560 and 570. The initial scores will appear as zero and all you really need to do is to enter one letter.

You'll notice the alphabet grid displayed by HIPROG. Names are spelled out by placing the cursor over a letter and pressing the enter key. Use the arrow keys (no need to hold down the FCTN key) to move the cursor up and down the character grid. Place the cursor over the left-pointing arrow to delete a character. Place the cursor over the check mark and press enter to record the entry. Remember to restore the REMed lines before running Intruder.

Although you may have entered a name using HIPROG, it won't appear when you first run the game. That's because the KEEPHI file won't be created until you start playing. Intruder keeps track of the top ten scores.

We've found that Intruder runs perfectly on the 99/4A, but is different in a small way on the Geneve. The frog doesn't nudge the switch that loads the next screen. Instead, it slides past it and the switch then clicks. A reasonably good RGB monitor provides better graphics than a composite TI screen. We recommend that you run the 9640 at its slowest speed with this program.

LOAD

```
10 CALL DELSPRITE(ALL):: CAL
L SCREEN(2)!136
20 CALL CLEAR !209
30 CALL CHARSET !118
40 CALL MAGNIFY(4)!225
50 CALL CHAR(33,"00101010001
```

(See Page 30)

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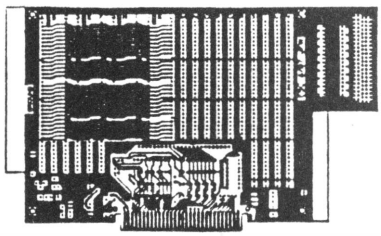

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#5 THE COUNT — It begins when you awake in a large brass bed in a castle somewhere in Transylvania. Who are you, what are you doing here and WHY did the postman deliver a bottle of blood? Difficulty Level: Moderate.

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#7 THE MYSTERY FUN HOUSE — As Adventure #7 begins, you find yourself hopelessly lost in the middle of a carnival fun house. While escape may elude you, one thing is very clear — you're NOT here to have a good time! Difficulty Level: Moderate.

#8 PYRAMID OF DOOM — This is an Adventure that will transport you to a dangerous land of crumbling ruins and trackless desert wastes into the PYRAMID OF DOOM! Jewels, gold — it's all here for the plundering — IF you can find the way. Difficulty Level: Moderate.

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#11 SAVAGE ISLAND PART II — The suspense begun in Adventure #10 now comes to an incredible conclusion with SAVAGE ISLAND PART II! This Adventure requires you to have successfully finished #10, wherein you were given the secret password to begin this final half. NOTE: For experienced Adventurers only! Difficulty Level: Advanced.

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INTRUDER LOAD—

(Continued from Page 27)

```
00000FF00183C182400FF") !072
60 CALL CHAR(48,"00FE828282F
E0000001010101010000000FE02F
E80FE000000FE02FE02FE00000")
!158
70 CALL CHAR(52,"008282FE020
2000000FE80FE02FE000000FE80F
E82FE000000FE040810100000")!
121
80 CALL CHAR(56,"00FE82FE82F
E000000FE82FE02FE00000000100
010000000") !247
90 CALL CHAR(65,"00FE82FE828
2000000FC82FC82FC000000FE808
080FE000000FC828282FC0000")!
196
100 CALL CHAR(69,"00FE80FE80
FE000000FE80FE8080000000FE80
9E82FE0000008282FE82820000")
!191
110 CALL CHAR(73,"00FE101010
FE0000000602028 2FE0000008284
F88482000000808080FE0000")
!015
120 CALL CHAR(77,"0082C6AA92
82000000 82E2928E82000000FE82
8282FE000000FE82FE80800000")
!119
130 CALL CHAR(81,"00FE82828A
FE000000FE82FE8482000000FE80
FE02FE000000FE101010100000")
!148
140 CALL CHAR(85,"0082828282
FE0000008282442810000000829 2
AAC6820000000C6281028C60000")
!000
150 CALL CHAR(89,"008282FE02
FE000000FE0C1060FE0000")!165
160 CALL CHAR(140,"FF7F78787
878787F7F7B7978787878FCF0FC1
E0E0E0E1EFCF0C0E0F0783C1E3F"
)!229
170 CALL CHAR(136,"FF7F78787
878787F7F7878787878 7FFFFFFF0
100000000FCFC0000000001FFFF"
)!121
180 CALL CHAR(132,"FF7F78787
8787878787878787878 7FFFE0F83
C0E0607070707070 7060E3CF8E0"
)!071
190 CALL CHAR(128,"FC7878787
8787878787878C7C3E3F1F0F0F060
6060606060606060E0E1CFCF8F0"
)!061
200 CALL CHAR(124,"FFFF83030
3030303030303030303030307FFFFC
1C0C0C0C0C0C0C0C0C0C0C0C0E0"
)!003
210 CALL CHAR(40,"FF00000000
000000FF81FF81FF000000FF0000
0000000000000000000000000FF")
!246
220 CALL CHAR(112,"000000000
000000001071F3F77793E0700000
00000000000FCFBFFDFBEC3886"
)!143
230 CALL CHAR(116,"000000000
0000010307 0F1F3F5F307C00000
00000003EFBFFFEFCB0D8080800"
)!152
240 CALL CHAR(104,"000000010
303013E3F0303030606 0C0C00000
080C0C0807CFCC0C0C060603030"
)!070
250 CALL CHAR(108,"3F3F23030
3030303030303030233F3FFCFCC
4C0C0C0C0C0C0C0C0C0C0C4FCFC"
)!046
260 CALL CHAR(100,"000000000
00000070A127FE7DBBDBD1800000
000000000F0584CFFE7DBBDBC18"
)!213
270 CALL CHAR(96,"0000000000
0000003FDFFFFB7D331C61000000
000000000080E0F8FCEE9E7CE0")
!149
280 CALL CHAR(44,"0000000000
007CDFFF7F3F0D1B1010000000000
0000000080C0E0F0F8FCFA0C3E")
!142
290 CALL CHAR(36,"081C1C080C
0E0707070F0F1F1D176361103838
103070E0E0E0F0F0F8B8E8C686")
!207
300 CALL CHAR(92,"0000000000
00080CC44020073FFF1F07000000
0000004060828C08E0FEFFFCE0")
!102
310 CALL CHAR(60,"0000000018
180CC4601800123244CC08000000
6060424688900000484466662 0")
!202
320 CALL CHAR(120,"F0787C7E7
F7B797878787878787878FC3F1E1
E1E1E9EDEFE7E3E1E1E1E1E1E3F"
)!236
330 REM**********************
**************************
********TITLESCREEN***********
**************************
**************************
```

```
!224
340 CALL CLEAR :: FOR I=1 TO
 14 :: CALL COLOR(I,1,1):: N
EXT I !156
350 CALL CHAR(32,"000000FF00
000000")!217
360 RESTORE :: FOR I=1 TO 8
:: READ CH :: CALL SPRITE(#1
,CH,1,I*16+5,I*31-30):: NEXT
 I !071
370 DATA 108,120,124,140,128
,132,136,140,E !073
380 DISPLAY AT(6,1):"
        A MNIE ISIS
            GAME" !181
390 DISPLAY AT(18,1):"
 1983                      MIL
ES MCMANUS" !106
400 CALL COLOR(1,8,1)!177
410 FOR I=1 TO 8 :: CALL COL
OR(#I,9):: NEXT I !115
420 FOR I=3 TO 8 :: CALL COL
OR(I,8,1):: NEXT I !036
430 REM**********************
**************************
*******HISCORESCREEN*********
**************************
**************************
!237
440 OPEN #1:"DSK1.HISCORES",
SEQUENTIAL,INTERNAL,INPUT ,V
ARIABLE !252
450 FOR I=1 TO 10 !105
460 INPUT #1:HS(I)!143
470 INPUT #1:HN$(I)!174
480 NEXT I !223
490 CLOSE #1 !151
500 FOR P=1 TO 150 :: CALL K
EY(0,K,S):: IF S=-1 THEN 520
 !057
510 NEXT P !230
520 CALL DELSPRITE(ALL):: CA
LL CLEAR :: CALL CHAR(32,"00
00000000000000")!245
530 CALL COLOR(3,7,1):: CALL
 COLOR(4,7,1):: FOR I=5 TO 8
 :: CALL COLOR(I,13,1):: NEX
T I !188
540 DISPLAY AT(1,1):"
  INTRUDER
                           H
ALL OF HEROES" !087
550 FOR I=1 TO 10 !105
560 DISPLAY AT(I+6,6-INT(LEN
(STR$(HS(I)))/2)):HS(I);!012
```

(See Page 32)

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INTRUDER LOAD—

(Continued from Page 30)

```
570 DISPLAY AT(I+6,18-INT(LE
N(HN$(I))/2)):HN$(I)!130
580 NEXT I !223
590 DISPLAY AT(20,1):"
PRESS S TO START
                        ANY
 OTHER KEY FOR MORE" !099
600 FOR I=10 TO 1 STEP -1 !2
15
610 CALL KEY(0,K,S):: IF S=-
1 THEN 670 !167
620 CALL HCHAR(I+6,1,32,32)!
183
630 DISPLAY AT(I+6,6-INT(LEN
(STR$(HS(I)))/2)):HS(I); !012
640 DISPLAY AT(I+6,18-INT(LE
N(HN$(I))/2)):HN$(I)!130
650 NEXT I !223
660 GOTO 600 !169
670 IF K=83 THEN 840 !134
680 REM**********************
**********************
******* INSTRUCTIONS ********
********** SCREEN ***********
**************************
!195
690 CALL CLEAR :: FOR I=1 TO
 14 :: CALL COLOR(1,1,1):: N
EXT I !156
700 DISPLAY AT(1,1):"
    HOW
  TO PLAY" !117
710 RESTORE :: FOR I=9 TO 23
 STEP 2 :: READ CH :: CALL H
CHAR(4,I,CH):: CALL HCHAR(5,
I,CH+1):: CALL HCHAR(4,I+1,C
H+2):: CALL HCHAR(5,I+1,CH+3
)!096
720 NEXT I !223
730 FOR I=10 TO 14 :: CALL C
OLOR(I,7,1):: NEXT I :: FOR
I=1 TO 9 :: CALL COLOR(I,8,1
):: NEXT I !037
740 DISPLAY AT(7,1):"
   OBJECT:                FROGG
IE HAS FALLEN INTO    THE BI
G FACTORY: IT IS YOUR" !004
750 DISPLAY AT(10,1):" MISSI
ON TO GET HIM SAFELY    OUT
BY AVOIDING PRODUCTS    ON T
HE ASSEMBLY LINE AND" !157
760 DISPLAY AT(13,1):" MOVIN
G THROUGH THE FACTORY:" !022
770 DISPLAY AT(15,1):"
      KEYS:" !062
780 DISPLAY AT(17,1):"   D K
: SKIP FROG FORWARD" !150
790 DISPLAY AT(18,1):"   E O
: HOP SHORT OBJECTS:      WO
RTH 10 POINTS EACH" !251800
DISPLAY AT(20,1):"W P: LEAP
HIGH TO HIT SWITCH  OR JUMP
OVER ANY OBJECT" !062
810 DISPLAY AT(23,1):"
PRESS S TO START          ANY
 OTHER KEY FOR MORE" !202
820 CALL KEY(0,K,S):: IF S=0
 THEN 820 !123
830 IF K<>83 THEN 340 !081
840 CALL CLEAR !209
850 CALL CHAR(140,"3F5AB0FFF
F05A3FFF000000000000FFFC5AB
0FFFFF05AFCFF99FF000000000")
!195
860 CALL CHAR(136,"40A0601008
0402010000000000000000000
0000000000804020100804020 1"
)!092
870 CALL CHAR(132,"000000000
0000000102040810204080020 50
60810204080000000000000000"
)!081
880 CALL CHAR(128,"020203000
1060600000000000000040 40C
0800000000000000000000000"
)!075
890 CALL CHAR(124,"020203010
0000000000000000000040 40C
0008060600000000000000000"
)!071
900 CALL CHAR(33,"0010101000
100000FF0183C182400FF")!072
910 CALL CHAR(108,"000000000
000030F0F1F1F1F1F0B0C0300000
0000000C0F0F0F8E3E3C89030C0"
)!150
920 CALL MAGNIFY(3)!224
930 RUN "DSK1.FROG1" !026
```

INTRUDER FROG1

```
10 ON BREAK NEXT !191
20 !
          INTRUDER

       1983 MILES MCMANUS !08
3
100 CALL CLEAR :: FOR I=1 TO
 14 :: CALL COLOR(I,1,1):: N
EXT I !156
110 TS=0 :: SP=1 :: LEV=1 ::
 MAN=5 :: FLOOR=1 :: SCORE=0
 !231
120 C1=5 :: C2=12 :: C3=7 !2
00
121 DIM E(40):: E(0)=1 !079
125 OPEN #1:"DSK1.HISCORES",
SEQUENTIAL,INTERNAL,INPUT ,V
ARIABLE !252
126 FOR I=1 TO 10 !105
127 INPUT #1:HS(I)!143
128 INPUT #1:HN$(I)!174
129 NEXT I :: CLOSE #1 !248
130 OPEN #1:"DSK1.FROGDATA",
SEQUENTIAL,INTERNAL,INPUT ,V
ARIABLE !228
140 RANDOMIZE !149
150 CALL HCHAR(1,28,40,5)::
CALL HCHAR(24,1,43,32)!018
160 CALL HCHAR(3,5,41,28)::
CALL HCHAR(4,28,41,3):: CALL
 HCHAR(5,29,41)!110
170 FOR I=8 TO 23 STEP 5 ::
CALL HCHAR(I,6,141,22):: CAL
L HCHAR(I-2,1,143,2):: CALL
HCHAR(I,1,143,2)!130
180 CALL HCHAR(I-2,31,143,2)
:: CALL HCHAR(I,31,143,2)!14
9
190 NEXT I !223
200 CALL HCHAR(8,3,140):: CA
LL HCHAR(8,4,141,2):: CALL H
CHAR(8,28,142)!238
210 CALL HCHAR(13,5,140):: C
ALL HCHAR(13,28,141,2):: CAL
L HCHAR(13,30,142)!167
220 CALL HCHAR(18,3,140):: C
ALL HCHAR(18,4,141,2):: CALL
 HCHAR(18,28,142)!132
230 CALL HCHAR(23,3,140):: C
ALL HCHAR(23,4,141,27):: CAL
L HCHAR(23,30,142)!169
240 CALL HCHAR(8,29,143,2)::
 CALL HCHAR(13,3,143,2):: CA
LL HCHAR(18,29,143,2)!232
260 CALL HCHAR(1,1,83)!204
270 CALL HCHAR(1,2,67)!207
280 DISPLAY AT(1,0):"ORE:000
0";:: DISPLAY AT(1,10):"HS:0
000";:: DISPLAY AT(1,17-LEN(
STR$(HS(1)))):STR$(HS(1));!0
67
281 CALL HCHAR(8,7,141,14)::
```

(See Page 33)

INTRUDER FROG1—

(Continued from Page 32)

```
 CALL HCHAR(8,15-INT(MAN/2),
34,MAN)!150
282 DISPLAY AT(1,18):"FLOOR:
";STR$(FLOOR);!079
290 CALL COLOR(2,7,1):: CALL
 COLOR(14,8,1):: CALL COLOR(
1,8,1):: FOR I=3 TO 8 :: CAL
L COLOR(I,13,1)!190
300 NEXT I !223
310 SP=SP+2 !192
320 H=0 :: D=-1 :: LEV=1 !09
6
330 CALL HCHAR(8,7,141,14)::
 CALL HCHAR(8,15-INT(MAN/2),
34,MAN)!150
340 DISPLAY AT(1,9-LEN(STR$(
SCORE))):STR$(SCORE);!163
341 IF SCORE<HS(1)THEN 350 !
153
342 DISPLAY AT(1,17-LEN(STR$
(SCORE))):STR$(SCORE);!211
350 DISPLAY AT(1,18):"FLOOR:
";STR$(FLOOR);!079
360 IF TS=1 THEN 380 !217
361 TS=1 !095
370 DISPLAY AT(10,8):"THE TO
Y ROOM";:: FOR P=1 TO 400 ::
 NEXT P :: CALL HCHAR(10,5,3
2,18)!101
380 FOR I=1 TO 13 :: CALL DE
LSPRITE(#I):: NEXT I !028
390 CALL SPRITE(#27,136,7,64
,224):: CALL SPRITE(#25,136,
7,144,224)!254
400 CALL SPRITE(#28,132,7,24
,18):: CALL SPRITE(#26,132,7
,104,18)!144
410 CALL SPRITE(#21,128,11,1
45,112):: CALL SPRITE(#22,12
4,11,105,112)!113
420 CALL SPRITE(#23,128,11,6
5,112):: CALL SPRITE(#24,124
,11,22,112)!018
430 CALL SPRITE(#20,128,15,2
,220)!148
440 CALL SPRITE(#1,112,13,14
5,1,0,0)!182
450 CALL SPRITE(#14,40,1,56,
240):: CALL SPRITE(#16,40,1,
136,240):: CALL SPRITE(#15,4
0,1,96,1)!003
460 CALL SPRITE(#17,40,1,176
,1):: CALL SPRITE(#19,40,5,1
92,240)!087
470 FOR I=1 TO 4 !059
480 DO(I)=0 !000
490 H=H+40 :: D=-D !199
500 CH(1)=100+(INT(RND*3))*4
 !204
510 CH(2)=100+(INT(RND*3))*4
 :: IF CH(2)=CH(1)THEN 510 !
238
520 CH(3)=100+(INT(RND*3))*4
 :: IF CH(3)=CH(1)OR CH(3)=C
H(2)THEN 520 !090
530 CALL SPRITE(#-1+I*3,CH(1
),C1,H,INT(RND*64)+16,0,D*SP
)!176
540 CALL SPRITE(#I*3,CH(2),C
2,H,130,0,D*SP)!152
550 CALL SPRITE(#1+I*3,CH(3)
,C3,H,INT(RND*63)+193,0,D*SP
)!040
560 NEXT I !223
570 CALL SPRITE(#18,40,2,192
,17,0,0)!197
580 CALL KEY(0,K,S):: IF S=0
 THEN 580 !138
590 IF K=69 OR K=68 OR K=87
THEN 620 !164
610 GOTO 580 !149
620 CALL MOTION(#18,0,1):: C
ALL PATTERN(#1,116)!189
630 CALL LOCATE(#1,143,8)!08
1
640 CALL LOCATE(#1,146,16)!1
32
650 CALL LOCATE(#1,150,24)!1
26
660 CALL LOCATE(#1,154,32)!1
29
670 CALL LOCATE(#1,158,36)!1
37
680 CALL LOCATE(#1,161,42)!1
28
690 CALL PATTERN(#1,112)!000
700 CALL MOTION(#1,0,-SP)!10
5
710 CALL KEY(0,K,S)!187
720 CALL COINC(ALL,C)!037
730 IF C=-1 THEN 1180 !090
740 IF S=0 THEN 710 !207
750 IF K=68 THEN 790 !087
760 IF K=69 THEN 870 !168
770 IF K=87 THEN 1000 !042
780 GOTO 710 !023
790 CALL MOTION(#1,0,0)!253
800 CALL POSITION(#1,X,Y)!09
3
810 IF Y+12>250 THEN 700 !03
6
820 CALL PATTERN(#1,116)!004
830 CALL LOCATE(#1,X-2,Y+6)!
027
840 CALL LOCATE(#1,X,Y+12)!1
40
850 CALL PATTERN(#1,112)!000
860 GOTO 700 !013
870 CALL MOTION(#1,0,0)!253
880 CALL POSITION(#1,X,Y)!09
3
890 IF Y+32>250 THEN 700 !03
8
900 CALL PATTERN(#1,116)!004
910 CALL LOCATE(#1,X-5,Y+6)!
030
920 CALL LOCATE(#1,X-9,Y+12)
!080
930 CALL LOCATE(#1,X-14,Y+16
)!129
940 CALL COINC(ALL,C):: IF C
=-1 THEN 1180 !001
950 CALL LOCATE(#1,X-9,Y+24)
!083
960 CALL LOCATE(#1,X-5,Y+28)
!083
970 CALL LOCATE(#1,X,Y+32)!1
42
980 CALL PATTERN(#1,112)!000
990 SCORE=SCORE+10 :: GOTO 7
00 !049
1000 CALL MOTION(#1,0,0)!253
1010 CALL POSITION(#1,X,Y)!0
93
1020 IF Y>188 THEN 1300 !155
1030 CALL PATTERN(#1,116)!00
4
1040 CALL LOCATE(#1,X-5,Y+8)
!032
1050 CALL LOCATE(#1,X-10,Y+1
6)!125
1060 CALL LOCATE(#1,X-15,Y+2
4)!129
1070 CALL LOCATE(#1,X-20,Y+3
2)!124
1080 CALL COINC(#1,#20+LEV,1
0,C):: IF C=0 THEN 1110 !101
1090 DO(LEV)=1 :: CALL SOUND
(1,-5,0)!154
1100 CALL DELSPRITE(#20+LEV,
#24+LEV)!224
1110 CALL LOCATE(#1,X-15,Y+4
0)!127
1120 CALL LOCATE(#1,X-10,Y+4
4)!126
1130 CALL LOCATE(#1,X-5,Y+49
```

(See Page 34)

INTRUDER FROG1—

(Continued from Page 33)

```
)!086
1140 CALL LOCATE(#1,X,Y+54)!
146
1150 CALL PATTERN(#1,112)!00
0
1160 GOTO 700 !013
1170 !

    FROGGIE BITES THE DUST !
062
1180 CALL MOTION(#1,0,0)!253
1190 CALL POSITION(#1,X,Y)!0
93
1200 CALL PATTERN(#1,36)!212
1210 FOR I=X TO 174 STEP 4 !
178
1220 CALL LOCATE(#1,I,Y)!143
1230 NEXT I !223
1240 CALL SPRITE(#1,92,7,I,Y
)!073
1250 CALL SOUND(-40,110,10,1
11,10,-7,0)!078
1260 CALL PATTERN(#1,60)!209
1270 CALL DELSPRITE(#18)!183
1280 MAN=MAN-1 :: IF MAN=-1
THEN 2880 !082
1290 GOTO 320 !144
1300 IF DO(LEV)=0 THEN 700 !
089
1310 DP=INT((240-Y)/3)!055
1320 CALL PATTERN(#1,116)!00
4
1330 CALL LOCATE(#1,X-5,Y+DP
)!179
1340 CALL LOCATE(#1,X-10,Y+D
P*2)!158
1350 CALL LOCATE(#1,X-16,Y+D
P*3)!165
1360 CALL PATTERN(#1,112)!00
0
1370 CALL KEY(0,K,S)!187
1380 CALL COINC(ALL,C):: IF
C=-1 THEN 1180 !001
1390 IF S=0 THEN 1370 !102
1400 IF K=80 OR K=79 OR K=75
 THEN 1420 !191
1410 GOTO 1370 !174
1420 CALL PATTERN(#1,96)!218
1430 LEV=LEV+1 !071
1440 CALL KEY(0,K,S)!187
1450 CALL COINC(ALL,C):: IF
C=-1 THEN 1180 !001
1460 IF S=0 THEN 1440 !172
1470 IF K=80 OR K=79 OR K=75
 THEN 1490 !005
1480 GOTO 1440 !244
1490 CALL POSITION(#1,X,Y)::
 CALL PATTERN(#1,44)!178
1500 CALL LOCATE(#1,X-6,Y-8)
!034
1510 CALL LOCATE(#1,X-12,Y-1
6)!128
1520 CALL LOCATE(#1,X-18,Y-2
4)!133
1530 CALL LOCATE(#1,X-24,Y-3
6)!133
1540 CALL PATTERN(#1,96)!218
1550 CALL MOTION(#1,0,SP)!16
7
1560 CALL KEY(0,K,S)!187
1570 CALL COINC(ALL,C):: IF
C=-1 THEN 1180 !001
1580 IF S=0 THEN 1560 !037
1590 IF K=75 THEN 1630 !160
1600 IF K=79 THEN 1710 !244
1610 IF K=80 THEN 1840 !111
1620 GOTO 1560 !109
1630 CALL MOTION(#1,0,0)!253
1640 CALL POSITION(#1,X,Y)!0
93
1650 IF Y-12<1 THEN 1550 !01
8
1660 CALL PATTERN(#1,44)!211
1670 CALL LOCATE(#1,X-2,Y-6)
!028
1680 CALL LOCATE(#1,X,Y-12)!
141
1690 CALL PATTERN(#1,96)!218
1700 GOTO 1550 !099
1710 CALL MOTION(#1,0,0)!253
1720 CALL POSITION(#1,X,Y)!0
93
1730 IF Y-32<1 THEN 1550 !02
0
1740 CALL PATTERN(#1,44)!211
1750 CALL LOCATE(#1,X-5,Y-6)
!031
1760 CALL LOCATE(#1,X-9,Y-12
)!081
1770 CALL LOCATE(#1,X-14,Y-1
6)!130
1780 CALL COINC(ALL,C):: IF
C=-1 THEN 1180 !001
1790 CALL LOCATE(#1,X-9,Y-24
)!084
1800 CALL LOCATE(#1,X-5,Y-28
)!084
1810 CALL LOCATE(#1,X,Y-32)!
143
1820 CALL PATTERN(#1,96)!218
1830 SCORE=SCORE+10 :: GOTO
1550 !135
1840 CALL MOTION(#1,0,0)!253
1850 CALL POSITION(#1,X,Y)!0
93
1860 IF Y<55 THEN 2010 !042
1870 CALL PATTERN(#1,44)!211
1880 CALL LOCATE(#1,X-5,Y-8)
!033
1890 CALL LOCATE(#1,X-10,Y-1
6)!126
1900 CALL LOCATE(#1,X-15,Y-2
4)!130
1910 CALL LOCATE(#1,X-20,Y-3
2)!125
1920 CALL COINC(#1,#20+LEV,1
0,C):: IF C=0 THEN 1950 !176
1930 DO(LEV)=1 :: CALL SOUND
(1,-5,0)!154
1940 CALL DELSPRITE(#20+LEV,
#24+LEV)!224
1950 CALL LOCATE(#1,X-15,Y-4
0)!128
1960 CALL LOCATE(#1,X-10,Y-4
4)!127
1970 CALL LOCATE(#1,X-5,Y-49
)!087
1980 CALL LOCATE(#1,X,Y-54)!
147
1990 CALL PATTERN(#1,96)!218
2000 GOTO 1550 !099
2010 IF DO(LEV)=0 THEN 1550
!175
2020 DP=INT((Y-1)/3)!208
2030 CALL PATTERN(#1,44)!211
2040 CALL LOCATE(#1,X-5,Y-DP
)!180
2050 CALL LOCATE(#1,X-10,Y-D
P*2)!159
2060 CALL LOCATE(#1,X-16,Y-D
P*3)!166
2070 CALL PATTERN(#1,96)!218
2080 CALL KEY(0,K,S)!187
2090 CALL COINC(ALL,C):: IF
C=-1 THEN 1180 !001
2100 IF S=0 THEN 2080 !047
2110 IF K=68 OR K=69 OR K=87
 THEN 2130 !144
2120 GOTO 2080 !119
2130 CALL PATTERN(#1,112)!00
0
2140 LEV=LEV+1 !071
2150 CALL KEY(0,K,S)!187
2160 CALL COINC(ALL,C):: IF
C=-1 THEN 1180 !001
2170 IF S=0 THEN 2150 !117
```

(See Page 35)

INTRUDER FROG1—

(Continued from Page 34)

```
2180 IF K=68 OR K=69 OR K=87
 THEN 2200 !214
2190 GOTO 2150 !189
2200 CALL POSITION(#1,X,Y)::
 CALL PATTERN(#1,116)!227
2210 CALL LOCATE(#1,X-6,Y+8)
!033
2220 CALL LOCATE(#1,X-12,Y+1
6)!127
2230 CALL LOCATE(#1,X-18,Y+2
4)!132
2240 CALL LOCATE(#1,X-24,Y+3
2)!128
2250 CALL PATTERN(#1,112)!00
0
2260 IF LEV=5 THEN 2290 !154
2270 GOTO 700 !013
2290 CALL MOTION(#18,0,0)::
CALL MOTION(#1,0,10)!231
2300 FOR P=1 TO 645 :: NEXT
P !023
2310 CALL MOTION(#1,0,0)!253
2320 CALL POSITION(#1,X,Y)!0
93
2330 FOR P=1 TO 100 :: NEXT
P !009
2340 CALL PATTERN(#1,116)!00
4
2350 CALL LOCATE(#1,X,Y+6)!0
94
2360 CALL LOCATE(#1,X,Y+16)!
144
2370 CALL PATTERN(#20,124)!0
53
2380 CALL LOCATE(#1,X,Y+20)!
139
2390 CALL PATTERN(#1,112)!00
0
2400 CALL SOUND(20,-5,0)!171
2410 FOR I=13 TO 2 STEP -1 !
219
2420 CALL MOTION(#I,0,0)!076
2430 NEXT I !223
2440 RESTORE 2440 !238
2450 FOR I=1 TO 13 !108
2460 READ D,F !212
2470 CALL SOUND(-D,F,0,F+1,0
)!107
2480 NEXT I !223
2490 DATA 150,262,150,294,15
0,330,150,349,150,392,150,33
0,150,392,150,349,150,330 !1
21
2500 DATA 150,262,150,294,15
0,247,300,262,E !086
2510 FLOOR=FLOOR+1 :: SCORE=
SCORE+50*FLOOR !234
2520 IF E(INT(SCORE/500))=1
THEN 2580 !097
2530 E(INT(SCORE/500))=1 ::
MAN=MAN+1 :: CALL SOUND(1,90
0,0)!152
2580 REM DATA !212
2590 IF EOF(1)THEN 2610 !106
2600 GOTO 2720 !249
2610 FOR I=2 TO 13 :: CALL D
ELSPRITE(#I):: NEXT I !029
2615 DISPLAY AT(9,8):"CONGRA
TULATIONS!";:: DISPLAY AT(10
,7):"YOU HAVE DONE WELL";::
DISPLAY AT(11,8):"PRESS ANY
KEY TO";!017
2620 DISPLAY AT(12,7):"PROCE
ED TO LEVEL 2";!208
2630 RESTORE 2490 !032
2640 READ D,F !212
2660 CALL KEY(0,K,S):: IF S=
-1 THEN 2692 !149
2670 CALL SOUND(1,F,0)!255
2690 IF D=300 THEN 2630 !173
2691 GOTO 2640 !169
2692 CALL HCHAR(9,1,32,64)::
 CALL HCHAR(11,3,32,28):: CA
LL HCHAR(12,1,32,32)!1172700
 CLOSE #1 !151
2710 OPEN #1:"DSK1.FROGDATA"
,SEQUENTIAL,INTERNAL,INPUT ,
VARIABLE !228
2720 FOR I=2 TO 13 :: CALL D
ELSPRITE(#1):: NEXT I !029
2730 INPUT #1:N$ !176
2740 DISPLAY AT(10,15-INT(LE
N(N$))/2):N$;!089
2750 INPUT #1:C1$ !214
2760 INPUT #1:C2$ !215
2770 INPUT #1:C3$ !216
2780 INPUT #1:C1 !178
2790 INPUT #1:C2 !179
2800 INPUT #1:C3 !180
2810 CALL CHAR(100,C1$)!155
2820 CALL CHAR(104,C2$)!160
2830 CALL CHAR(108,C3$)!165
2840 FOR P=1 TO 100 :: NEXT
P !009
2850 CALL HCHAR(10,1,32,32)!
217
2860 GOTO 310 !134
2880 IF E(INT(SCORE/500))=1
THEN 2900 !162
2890 E(INT(SCORE/500))=1 ::
MAN=MAN+1 :: GOTO 320 !011
2900 CLOSE #1 !151
2910 IF SCORE<HS(10)THEN 300
0 !046
2920 OPEN #1:"DSK1.KEEPHI",S
EQUENTIAL,INTERNAL,OUTPUT,VA
RIABLE !181
2930 PRINT #1:SCORE !196
2940 CLOSE #1 !151
2960 RUN "DSK1.HIPROG" !133
3000 DISPLAY AT(10,10):"GAME
 OVER" !003
3010 CALL DELSPRITE(ALL):: R
UN "DSK1.LOAD" !207
```

INTRUDER HIPROG

```
10 CALL DELSPRITE(ALL):: CAL
L CLEAR !198
11 DIM HS(10),HN$(10)!194
20 FOR I=1 TO 14 :: CALL COL
OR(I,7,1):: NEXT I !079
30 OPEN #1:"DSK1.KEEPHI",SEQ
UENTIAL,INTERNAL,INPUT ,VARI
ABLE !080
40 INPUT #1:SCORE !186
50 CLOSE #1 !151
60 OPEN #1:"DSK1.HISCORES",S
EQUENTIAL,INTERNAL,INPUT ,VA
RIABLE !252
70 FOR I=1 TO 10 !105
80 INPUT #1:HS(I)!143
90 INPUT #1:HN$(I)!174
100 NEXT I !223
101 CLOSE #1 !151
```

(See Page 36)

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INTRUDER HIPROG—

(Continued from Page 35)

```
110 CALL MAGNIFY(1)!222
120 X=65 :: Y=49 !027
130 CALL CHAR(33,"FE00000000
00FE00000000000000000002040
FF4020000001020CD870200000")
!167
140 DISPLAY AT(2,1):"
 WELCOME TO
    THE                    INTRU
DER HALL OF HEROES" !013
150 DISPLAY AT(6,19-(11+LEN(
STR$(SCORE))/2)):"YOUR SCORE
:";STR$(SCORE);!158
160 DISPLAY AT(9,1):"     A
B  C  D  E  F  G
                          H
I  J  K  L  M  N" !130
170 DISPLAY AT(13,1):"     O
 P  Q  R  S  T  U
                           V
 W  X  Y  Z  #  $" !002
180 DISPLAY AT(18,1):"NAME R
EADS:";!004
190 DISPLAY AT(21,1):"    ENT
ER:CHOOSE  BAR:SPACE       E:
MOVE UP X:MOVE DOWN
 S:LEFT D:RIGHT " !231
200 CALL SPRITE(#1,33,5,X,Y)
!081
210 CALL LOCATE(#1,X,Y)!158
220 CALL KEY(0,K,S)!187
230 IF S=0 THEN 220 !227
240 IF K=69 THEN 310 !118
250 IF K=68 THEN 330 !137
260 IF K=88 THEN 350 !159
270 IF K=83 THEN 370 !174
280 IF K=13 THEN 390 !187
290 IF K=32 THEN 480 !022
300 GOTO 220 !043
310 X=X-16 :: IF X<65 THEN X
=113 !217
320 GOTO 210 !033
330 Y=Y+24 :: IF Y>193 THEN
Y=49 !230
340 GOTO 210 !033
350 X=X+16 :: IF X>113 THEN
X=65 !217
360 GOTO 210 !033
370 Y=Y-24 :: IF Y<49 THEN Y
=193 !230
380 GOTO 210 !033
390 CALL SOUND(5,1000,0):: C
ALL GCHAR(INT(X/8)+1,INT(Y/8
)+1,G)!222
400 IF G<>35 THEN 420 !154
410 IF LEN(N$)-1<0 THEN 210
:: N$=SEG$(N$,1,LEN(N$)-1)::
 GOTO 460 !206
420 IF G=36 THEN 490 !032
430 IF LEN(N$)<15 THEN 450 !
099
440 N$=SEG$(N$,1,14)!118
450 N$=N$&CHR$(G)!228
460 DISPLAY AT(18,12):N$ !05
7
470 GOTO 210 !033
480 G=32 :: GOTO 430 !180
490 FOR I=1 TO 10 :: IF SCOR
E>HS(I)THEN 510 !116
500 NEXT I !223
510 SP=I !170
520 FOR I=10 TO SP+1 STEP -1
 !059
530 HS(I)=HS(I-1)!028
540 HN$(I)=HN$(I-1)!090
550 NEXT I !223
560 HS(SP)=SCORE !229
570 HN$(SP)=N$ !250
580 OPEN #1:"DSK1.HISCORES",
SEQUENTIAL,INTERNAL,OUTPUT,V
ARIABLE !097
590 FOR I=1 TO 10 !105
600 PRINT #1:HS(I)!153
610 PRINT #1:HN$(I)!184
620 NEXT I !223
630 CLOSE #1 !151
640 DISPLAY AT(21,1):"     YO
UR NAME HAS BEEN          $
    RECORDED       $
 PRESS ANY KEY" !245
650 CALL KEY(0,K,S):: IF S=0
 THEN 650 !208
660 RUN "DSK1.LOAD" !218
```

INTRUDER DATAFILE

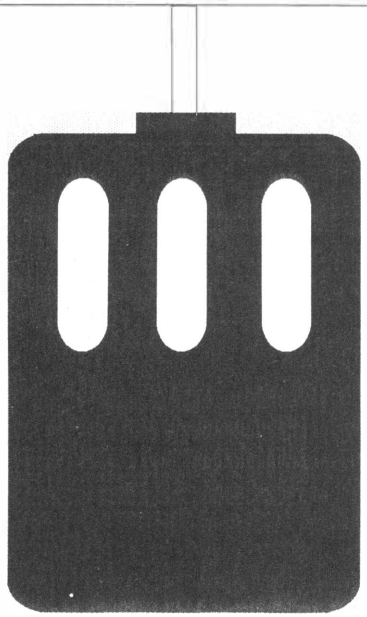
```
THE DINING ROOM
000000000000FFFFFFFF7F7F3F007F3F000000000000FCF2F2F2E4F8C000E0C0
00000000000000000000003070E1C18000000040A152A343840800000000000
00000060F8F87C7C1C020100000000000000000000000000000000C0E0703818
@
@
@
THE ARROW ROOM
000000000000818387FFF7F3818080000000000000000000F8F8F800000000000
0000000000000000FFFFFF000000000000000000000080C0E0F0F8F0E0C0800000
000000000103070F0101010101010101000000080C0E0F0F8C0C0C0C0C0C0C0C0
@
@
@
APPLIANCES ROOM
0000000414175F7F3DB87D1F7F0F1902000000000C080F0C0F0E8E0F0D0404000
00000003040808090805020203030301000000C0201010109020C040C0C0C080
0000000F003F6040404040404060 3F100000186080FE3B111B1F1B111B35FE04
@
@
@
CLOTHING ROOM
000000000000000030F1F1F3F3F2020FF0000000000000000C0F0F8F8FCFC0404FF
00000000000000000001C3060FFFFFB7100000000000000000000070C18F0E0E0C0
000000000000000080C0E0F7FFF7E0C080000000000000000008183878F878381808
@
@
@
PYRAMID ROOM
00000000000000000002070F1F3F7FFF000000000000000000000000080C0E0F0F8
00000000002070F1F3F7FFF000000000000000000000000080C0E0F0F800000000
0000000207 0F1F3F7FFF000000000000000000000000080C0E0F0F8000000000000
@
```

(See Page 37)

INTRUDER—

(Continued from Page 36)

```
@
@
FOOD ROOM
0000000000000000000000033FC7700F000000000000000000000080FCC30CF0
00000000300C0A0904040C1E1E0C00000000000000000000008060F0F060000000
0000000000000103070F0F1C38304080000000502858A0C0C080000000000000
@
@
@
SPHERE ROOM
00000000030F0F1F1F1F1F0F0F03000000000000C0F0F0F8F8F8F8F0F0C00000
00000000030F0F1F1F1F1F0F0F03000000000000C0F0F0F8F8F8F8F0F0C00000
000000030F0F1F1F1F1F0F0F03000000000000C0F0F0F8F8F8F8F0F0C0000000
@
@
@
ALIEN ROOM
00000000000708FFAAFF10380000000000000000000C040FEAAFE103800000000
000000000000000001071F3B757B3E6100000000000000000080E0F8DCAEDE7C86
00000000000708FFAAFF10380000000000000000000C020FEAAFE103800000000
@
@
@
THE HURDLE ROOM
0000000303030303020202020202020200000C0C0C0C0C04040404040404040
0000000000000303030303020202020200000000000C0C0C0C0C04040404040
00000000000000000000303030303020200000000000000000C0C0C0C0C04040
@
@
@
THE CUBE ROOM
000000FFFFFFFFFFFFFFFF000000000000000000000000000000000000000000
000000000F0F0F0F0F0F0F0F0000000000000000F0F0F0F0F0F0F0F000000000
0000000000000000000000000000000000000000000000000FFFFFFFFFFFFFFF
@
@
@
BRONZE ROOM:CODE BLUE
000000000000000000000001F3F7FFF000000000000000000000000F8FCFEFF
000000000000000000000001F3F7FFF000000000000000000000000F8FCFEFF
000000000000000000000001F3F7FFF000000000000000000000000F8FCFEFF
@
@
@
SILVER ROOM:RED ALERT
000000000000000000000001F3F7FFF000000000000000000000000F8FCFEFF
000000000000000000000001F3F7FFF000000000000000000000000F8FCFEFF
000000000000000000000001F3F7FFF000000000000000000000000F8FCFEFF
@
@
@
THE VAULT:GOLD ROOM
000000000000000000000001F3F7FFF000000000000000000000000F8FCFEFF
000000000000000000000001F3F7FFF000000000000000000000000F8FCFEFF
000000000000000000000001F3F7FFF000000000000000000000000F8FCFEFF
@
@
@
```

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Geneve

Myarc controller adds CALLs, and a 'fix' for Video Chess

By MIKE DODD

Owners of the MYARC disk controller card have access to four additional CALLs from TI BASIC and Extended BASIC. On the Geneve, these calls are available on all three disk controllers. They are:

—CALL DIR(n)—catalog disk drive n (this will also catalog the internal RAM-disk).

—CALL ILR—simulate the Editor/Assembler command CALL INIT.

—CALL LR(filename)—simulate the Editor/Assembler command CALL LOAD.

—CALL LLR(program-name)—simulate the Editor/Assembler command CALL LINK.

CALL DIR is probably the most useful of the CALLs, but the other three have their uses, as you shall see below.

'FIXING' VIDEO CHESS

One of the TI cartridges that doesn't work with the Geneve is Video Chess (the only other that I know of is Terminal Emulator II, but some versions of TE II will work on the Geneve).I found that the reason for Video Chess not working on the Geneve is that, when TI wrote the ROM portion of that program, they used >8804 for the VDP read data location, rather than >8800. On the 99/4A, >8804 is a duplicate of >8800, but not on the Geneve.

The easiest way to fix the cartridge is to use TI's debugger program, which was included on disk A of the Editor/Assembler package. Here is a step-by-step explanation of how to proceed:

Using the GPL loader of the Geneve, load the Video Chess cartridge.

Press F1 and F2 to unprotect >6000 and >7000.

Go into TI BASIC.

Using the new CALLs described above, load the TI debugger as follows:

CALL ILR
CALL LR("DSKn.DEBUG")
CALL LLR("DEBUG")

You are now in the debugger, although you will not be able to see anything. Toset the display for loading from BASIC, press the U key. You should now see a period on the bottom left.

Now you need to find all occurences of the hex value >8804. The ROM in Video Chess is only 4K long, so we won't bother searching in the second 4K.

To find the locations of >8804, type F6000,6FFF,8804<ENTER>. The debugger will now print a list of all occurences of >8804. In my cartridge, these were at: 6056, 624E, 6272, 6298, 63E0, 6416, 64B4, 658E, 6616, 67B8, 6B7E, 6C80, 6C86, and 6C94.

To change them, type M, the address, and ENTER (e.g. M6056<ENTER>). The debugger shouid print the address and 8804, which is the value currently at that address. Type 8800 and press enter. Repeat for the entire list.

When you are finished, press ALT = to leave the debugger. Go to TI-BASIC and place a disk with the Cartridge Saver program in any drive. Type:

CALL ILR
CALL LR("DSKn.CSAVE")

Using CSAVE, save your modified Video Chess cartridge back to disk.

'FIXING' TI-ARTIST

TI-Artist is a wonderful drawing program for the 99/4A. However, two bugs exist in TIA which prevent it from working on the Geneve. Fortunately, both are easily fixed with a sector editor. The first fix, which was found by Paul Charlton and distributed over some of the telecomunications networks, involves editing the first sector of the ARTPT2 file. At byte 3, change (in hex) 06 to 00 and write the sector back to disk. This patch will allow TIA to load, but still won't allow the save and load picture function to work. To fix this, find the starting sector of the file ARTPT3. Add 27 to it, so that you are editing the 28th sector. At byte 121, change (still in hex) 10 to 00, and write the sector back to disk.

TI-Artist will now work fine on the Geneve, except for the Print command, which still does not work perfectly.

The MY-Art program, which comes with the Myarc Mouse, is a powerful and fast drawing program with many features. However, TI-Artist, GRAPHX, and the like, still have their uses, such as the many fonts available for TI-Artist.

One feature of V2.01 of TI-Artist is support for an external input device DSR. In other words, this allows you to write a routine to utilize a device other than the joystick for input. What follows is an assembly language source listing to utilize the MYARC Mouse with TI-Artist:

```
* MYARC Mouse input routine for TI-Artist
* Copyright 1987 by Mike Dodd
* Written for publication in MICROpendium magazine.
*
* Right button acts as fire
* Middle button acts as space (toggle)

       REF  A,B,FIRE,SPACE
       REF  XMIN,YMIN,XMAX,YMAX
       BLWP @MOUSE          read mouse
       RT                   return to TIA

MWS    BSS  >20

MOUSE  DATA MWS,MOUSE1
MOUSE1 MOV  @30(R13),R12 get R15 of TIA
       MOV  @28(R13),R10 get R14 of TIA
       LI   R0,>8888
       BL   @IN             mouse on
       LIMI 0
       LI   R0,>038F
       BL   @IN
       SRA  R0,8
       A    R0,@A(R12)
       LI   R0,>058F
       BL   @IN
       SRA  R0,8
       A    R0,@B(R12)
       LI   R0,>018F
       BL   @IN
       CLR  @FIRE
       SRL  R0,15           button 3?
       JNC  CHKB1           no
       SETO @FIRE
CHKB1  CLR  @SPACE
       SRL  R0,1            button 2?
```

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GENEVE—

(Continued from Page 38)

```
      JNC  CHKB2       no
      SETO @SPACE
* check position
CHKB2 MOV  @A(R12),R0
      MOV  @B(R12),R1
      C    R0,@XMIN
      JGT  C1
      MOV  @XMIN,R0
C1    C    R0,@XMAX
      JLE  C2
      MOV  @XMAX,R0
C2    C    R1,@YMIN
      JGT  C3
      MOV  @YMIN,R1
C3    C    R1,@YMAX
      JLE  C4
      MOV  @YMAX,R1
C4    MOV  R0,@A(R12)
      MOV  R1,@B(R12)
      LI   R0,>008F    reset
      BL   @IN
      MOVB R10,R10
      JEQ  C5
* R4 stores flag on if fire was
* pressed last time.
      CB   @FIRE,R4
      JNE  C5
      CLR  @FIRE
      RTWP
C5    MOVB @FIRE,R4
      RTWP             return
*
IN    MOVB R0,@>8C02
      SWPB R0
      MOVB R0,@>8C02
      CLR  R0
      MOVB @>8802,R0
      RT
      END
```

Type this in with the Program Edit mode of MY-Word. Assemble with options RC (or, if listing to printer, RCL). When you load TI-Artist, select option 3 (input device). Type the filename of your object file and press enter. The Myarc mouse will now be used for input. The middle button acts as the space bar (to toggle between screens), and the right button acts as the fire button. If you wish the Myarc mouse DSR to be the default, rename (on a backup copy — otherwise you may lose the joystick DSR!) your object file to EXTDSR.

The Myarc mouse does not work well on a hard surface, such as a table. You can purchase mouse pads from a computer store for about $6 that provide a good surface for the mouse to roll on. However, I found that a 25-cent square of felt, purchased at a fabric store, works just as well, and for a fraction of the cost.

ACCESSING THE CLOCK

The clock resident on the Geneve is run by a MM58274 clock chip. That clock chip has 16 registers, numbered 0-15. They are listed in Appendix A of the Geneve manual.

In 99/4A mode, register 0 is accessed at address >8010, 1 at >8011, and so on, with 15 at >801F. You can access these addresses with the Extended BASIC CALL PEEK command. Register 0 is at address -32752, 1 is at -32751, and so on, with 15 at -32737.

All registers are only four bits in length — the first four bits read will be garbage. For this reason, it is best to mask out the first four bits after reading (i.e. CALL PEEK) to insure the accuracy of the data. In Extended BASIC, you can accomplish this with the instruction A=A AND 15. This sets the first four bits to 0, and leaves the last four intact.

Register 0 is the control register, which contains the following values:

0 — normal operation

4 — stop the clock

8 — enter "test" mode

The "test" mode (8) causes the clock to rapidly change the time and date several times a second. When the clock is in this mode, any attempt at writing to disk (either floppy or internal RAM-disk) will cause a lockup.

Registers 1 through 14 contain, respectively, Tenths of Seconds, Units Seconds, Tens Seconds, Units Minutes, Tens Minutes, Units Hours, Tens Hours, Units Days, Tens Days, Units Months, Tens Months, Units Years, Tens Years, and Day of Week. If the Tens Hours (register 7) contained 1 and the Units Hours (register 6) contained 5, the hour would be 15, or 3 PM.

Register 15 is the Clock Setting register. This is a bit-mapped register. The first two bits contain the number of years since the last leap year, from 0 to 3 (binary 00, 01, 10, or 11). The next bit is 0 for AM or 24-hour mode, and 1 for PM. The next and last bit is 0 for 12-hour mode, and 1 for 24 hour mode. Here is an example of setting this register: it is 1987, so it has been three years since the last leap year. Thus, the first two bits should be binary 11. The next bit should be 0 for 24-hour mode, and the last bit should be 1 for 24-hour mode (all Geneve functions operate assuming 24-hour mode). All the bits put together are 1101—decimal 13. From Extended BASIC, you could load this value with CALL LOAD(-32737,13).

For an excellent tutorial on hex and binary numbering systems, see Mack McCormick's first assembly tutorial, in the October 1985 MICROpendium.

Here is a program to read the clock from Extended BASIC, using assembly language:

```
* Clock program for XB
* Copyright 1987 by Mike Dodd
* Written for publication in MICROpendium magazine.
      DEF  CLKON,CLKOFF
      DEF  SETCLK
SEC   DATA >0000
CLKOFF CLR  @>83C4
      RT
CLKON LI   R0,CLK
      MOV  R0,@>83C4
      JMP  CLK3
CLK   C    @>8012,@SEC
      JEQ  CLK4
      LI   R0,>0B40
      MOVB R0,@>8C02
      SWPB R0
      MOVB R0,@>8C02
      LI   R0,>B01E
      JMP  CLK2
CLK1  LI   R1,>9A00
      MOVB R1,@>8C00
      MOVB *R0,R1
      ANDI R1,>0F00
      AI   R1,>9000
      MOVB R1,@>8C00
      DEC  R0
CLK2  MOVB *R0,R1
      ANDI R1,>0F00
      AI   R1,>9000
      MOVB R1,@>8C00
      DEC  R0
      CI   R0,>8011
      JNE  CLK1
CLK3  MOV  @>8012,@SEC
```

(See Page 40)

GENEVE—

(Continued from Page 39)

```
CLK4   RT
       END
```

Type this in with the ProgramEdit mode of MY-Word, and assemble it with the R option. To load, go into Extended BASIC and type:

CALL INIT :: CALL LOAD(''DSKn.object'')

where object is the filename you chose for the object file when assembling.

To start display of the clock, type CALL LINK(''CLKON''). CALL LINK(''CLKOFF'') will stop displaying the clock.

The program works by using the ISR (Interrupt Service Routine) of the 99/4A (and, obviously, the Geneve). When the clock display has been turned on, every 1/60 second the routine at CLK will be executed. Since reading and displaying the clock every 1/60 second would slow down execution of XB, the program will display the clock only if the seconds have changed. This is accomplished by storing the seconds in SEC. When the program starts, if the current seconds, as stored in the clock chip, equal the value stored in SEC, the program exits. Otherwise, it updates SEC and displays the clock.

Since the Geneve utilizes GRAM (as opposed to GROM), modifications that have been published for the GRAM Kracker and the like are often usable on the Geneve. The Geneve doesn't include the GK Memory Editor, so changing the GRAM isn't quite as easy. The best method is to use TI's debugger or Superbug II (by Edgar Dohmann), which allow you to modify RAM and GRAM. When you have finished your modifications, resave the cartridge to disk with CSAVE.

Unfortunately, one GRAM Kracker program which does not work on the Geneve is MG's GK Utility I.

One Geneve/99/4A compatibility problem involves the setting of VDP register 1. On the 9918A video processor used in the 99/4A, the Most Significant Bit of that register controls 4/16K operation. Thus, on the 99/4A, that bit should always be set to 1 for correct operation. On the 9938 — the contents of that bit can be either a 0 or 1 — it isn't used. So, if you write a program on the Geneve that sets that bit to 0, it will work on the Geneve, but not the 99/4A.

Puget Sound BBSes listed

The TIBBS of the Puget Sound 99ers in Lynnwood, Washington, is ''one of the nation's most active in the TI world,'' according to Chuck Wynne of the group.

The board operates at 300 and 1200 baud and is online at (206) 784-4142. It is accessible via PC Pursuit.

Wynne notes that other electronic bulletin boards in the Puget Sound area include a TIBBS at (206) 641-5884, with Ed Durfee as sysop, and the Queen Anne Computer Shoppe's board at (206) 361-0895, with Barbara Wiederhold as sysop.

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Mouse takes control of MY-Art

By JOHN KOLOEN

A collection of Geneve miscelleny:

Finding a database manager to run with the Geneve may be a bit tricky. So far, we have been able to get only one to run perfectly — a modified version of PR-Base. Others that work only with varying degrees of success are Acorn 99, Creative Filer, Navarone's DBM and Turbo Dataman. There are a number of third party programmers working on database programs for the Geneve, but none are expected to be ready for distribution until the second quarter of 1988.

Myarc has been contemplating the porting of a DB III clone for use with the Geneve, but there are some doubts as to whether the typical user would be interested in using something that sophisticated. Learning DB III is akin to learning a computer language. It's definitely designed for people with serious database needs.

MY-ART AVAILABLE

The Myarc Mouse and MY-Art program are now in distribution. The two are sold as a bundled package for about $125. The finished version of MY-Art carries a 1.0 version number.

It's a nifty graphics program, and the first program for the Geneve that loads directly out of M-DOS rather than a GPL interpreter. A version of MY-Word may become available by the end of this year that also loads out of M-DOS.

MY-Art allows the user to zoom in on individual pixels and supports resolutions of 256x212 pixels and 512x212 pixels and up to 256 colors. Artwork may be outputted to Epson-compatible printers or saved to disk. Speed of cursor movement is easily controlled, allowing extremely detailed work to be performed. (There are 10 speeds to choose from. I've found this to be a great asset to my otherwise unsteady hand.) The demo images that comes with MY-Art are impressive when viewed with an RGB monitor.

The program requires the Myarc Mouse

(See Page 44)

MY-Art demo

Myarc's Jack Riley demonstrates the MY-Art drawing program on the Geneve 9640 at the Chicago TI Faire. Visitors filled the room to watch the demo and question Riley about the 9640.

Several products introduced at TI fairs

By JOHN KOLOEN

If the turnout at the Chicago TI Faire is any indication, the TI99/4A world is alive and well. It's difficult to fix the number of visitors who attended this year's faire at Triton College, but the exhibit hall remained packed during most of the day Nov. 7. Attendance at the demonstrations depended on what was being displayed. Myarc again gained a substantial crowd for its demonstration of the Geneve and MY-Art. Also demonstrated was the Mechatronics 80-column card.

Several new products were introduced at the Faire by Genial Computerware and Bytemaster Computer Services.

Genial Computerware introduced PC-Transfer ($25) by Mike Dodd, a program that transfers MS or PC-DOS text files for use with the 4A and Geneve and Remind-Me ($15) by John Johnson, a calendar program written in assembly. Also introduced by Genial were three programs by Peter Hoddie: Graphics Expander ($10), which lets you take existing fonts and expand them in up to nine sizes in both horizontal and vertical dimensions; and two disks of fonts — called Genial Font Pack 1 and 2 — ported from public domain fonts for other computers. The Font Pack disks are $10 each.

Bytemaster introduced String Master ($19.95), a programming environment for the 4A using assembly LINKs.

One of the most promising new products at the faire wasn't even displayed. Two visitors from Italy, Dr. Luigi Grilli and Daniele Morini, brought with them a program called TIBM. The program is designed to transfer files between PCs and the Geneve and 99/4A. The two are developing the program with Paulo Bagnaresi of BA-Writer fame.

However, what is more interesting is what the trio is working on in connection

(See Page 43)

Forth tips

Adapt Quicksort for strings

By LUTZ WINKLER

In the preceding article I demonstrated how numbers can be sorted. Now we will see how the same routine can be adapted for sorting strings, i.e., putting them into alphabetical order.

The most obvious changes are the use of an additional variable (ORDER) and a few added and/or modified words. Instead of moving strings into alphabetical order, pointers are stored in ORDER, similar to sector 1 of a disk containing pointers to the files in their alphabetical order while the files themselves remain in random order.

There is also the -TEXT word from Brodie to compare strings except that it is called =TEXT to avoid confusion with TI-Forth's TEXT. Variable STRGS serves the same purpose as XX which stored numbers in the previous example. ENTER has become ENTER$, and similarly SHOW is SHOW$. SET is used to initialize ORDER.

```
 0 ( STRING SORT DEMO - 1  BASED ON GARY NEMETH'S QUICKSORT )
 1 : NOT 0= ;              : 2/  1 SRA ;
 2 : 2DUP  OVER OVER ;     : 2SWAP  ROT >R ROT R> ;
 3 : 2OVER  SP@ 6 + @ SP@ 6 + @ ;
 4
 5 : =TEXT  ( addr1 u addr2 --- f)
 6          2DUP + SWAP
 7          DO DROP 2+ DUP 2- @ I @ - DUP
 8             IF DUP ABS / LEAVE THEN 2
 9          +LOOP SWAP DROP ;
10
11 0 VARIABLE ORDER 40 ALLOT
12 0 VARIABLE STRGS 40 ALLOT
13
14
15 -->
```

```
 0 ( STRING SORT DEMO - 2 )
 1
 2 : SET  40 0 DO I 2 / ORDER I + ! 2
 3           +LOOP ;
 4
 5 : ENTER$  SET
 6           40 0 DO CR ." ENTER STRING : "
 7                   I 2 / 2 .R ." : " PAD 2 EXPECT
 8                   PAD STRGS I + 2 CMOVE 2
 9                +LOOP ;
10
11 : SHOW$  40 0 DO CR ORDER I + @ DUP 12 .R SPACE
12                   2 * STRGS + 2 TYPE 2
13                +LOOP ;
14 -->
15
```

The basic sort itself (now on screen 3) remains virtually unchanged with the exception of COMP (now $COMP) which has to furnish parameters for =TEXT. String length is purposely limited to two letters in the interest of speed. Unless it is absolutely imperative that — for example — the names RICHARD, RICHARDS, RICHARDSEN and RICHARDSON be sorted in proper order, the sort should be performed with a limited string length. This is because =TEXT is a high-level definition and is by no means a speed demon.

```
 1 ( STRING SORT DEMO - 3 )
 2 0 VARIABLE MIDDLE
 3 : K@  2 * ORDER + @ ;
 4 : K!  2 * ORDER + ! ;
 5 : MID@  OVER - 2/ + K@ MIDDLE ! ;
 6 : $COMP  K@ 2 * STRGS + 2 MIDDLE @ 2 * STRGS + =TEXT ;
 7 : EXCH  2DUP K@ SWAP K@ ROT K! SWAP K! ;
 8 : SORT  ( n1 n2 --- )
 9         2DUP > IF DROP DROP
10                 ELSE 2DUP 2DUP MID@
11         BEGIN SWAP BEGIN DUP $COMP 0< WHILE 1+ REPEAT
12               SWAP BEGIN DUP $COMP 0 > WHILE 1- REPEAT
13               2DUP > NOT IF 2DUP EXCH 1 -1 D+ THEN 2DUP >
14         UNTIL SWAP ROT 2OVER 2OVER - ROT ROT -
15               < IF 2SWAP THEN MYSELF MYSELF THEN ;
```

Usage is as follows:

ENTER$ — allows input of 20 two-letter strings.

0 19 SORT — generates the alphabetical list in the form of pointers which are stored in ORDER

SHOW$ — displays the result of the sort

This routine can easily be adapted for inclusion in a program where an alphabetical listing is desired. Parameters for allotting sufficient space in ORDER and STRGS would have to be derived from the number of records (actual or allowed). The same is true for any loop to read the pointers in ORDER and look up the corresponding records. Storing the contents of ORDER in the program (i.e, on disk) would eliminate the need for sorting until a new record is added to the file. Sorting takes time and — unless =TEXT can be rewritten in assembly language to speed it up — one should remember to keep string length to a minimum. The longer the strings, the longer it takes to sort them.

User groups

The following are additions and updates to our user group listings, which we began publishing in the May 1987 issue.

Listings with an asterisk came from the United 99/4 Data Base of the Johnson Space Center Users Group. For information on the UN99DB, write JUG, 2321 Coryell St., League City, TX 77573

Arizona

***Valley of Sun TI Users Group,** 1425 Del Reo Dr., Tempe, AZ 82582.

California

***Southbay Users Group,** P.O. Box 23447, San Jose, CA 95153-3447.

New Jersey

Central Garden State Users Group, c/o Glenn G. Pearson, 61 Country Lane, Hamilton Square, NJ 08690 (new address), (609) 890-9337 (home), (609) 683-2503 (work). Meets at 7 p.m. second Tuesday of the month at Twin Rivers Library, East Windsor, NJ. Interests include spreadsheets, word processing, games, assembly, Forth and Geneve 9640.

Ohio

***Cleveland Area 99/4A Users Group,** P.O. Box 23283, Euclid, OH 44123.
***Northwest Ohio 99ers,** 612 Medow Springs Rd., Maumee, OH 43537

Pennsylvania

Susquehanna Valley Computer Group, P.O. Box 90, Hummels Wharf, PA 17831 (new address).

Texas

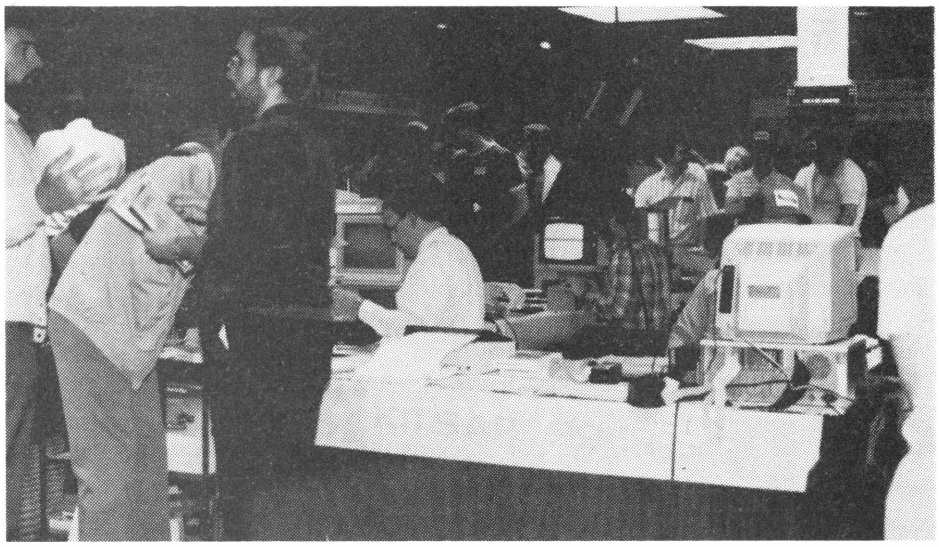
***Houston Users Group,** 9122 Hammerly, Houston, TX 77080.

(See Page 50)

FAIRE—

(Continued from Page 41)

with TIBM. While it will transfer files between PCs and the 4A/Geneve, Dr. Grilli also indicated that it may include the ability to transfer BASIC programs from a PC to a TI. Language differences made understanding difficult, however, Dr. Grilli insisted that he, Morini and Bagnaresi are not stopping with text files and that the ultimate aim is to allow users to convert BASIC programs written for a PC for use on a TI. (It's not known if all versions of BASIC that run on a PC will be supported.) Dr. Grilli pointed toward a December release of the first version of the TIBM program, though it is not certain whether it will include the BASIC conversion utility.



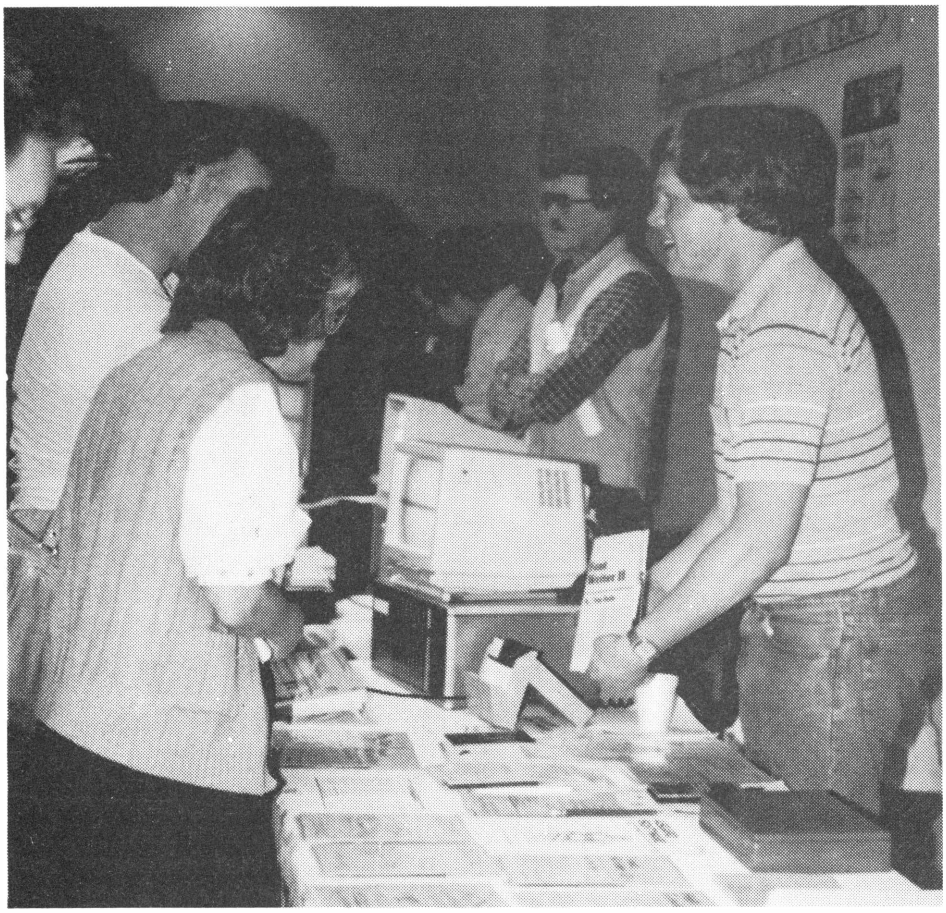
Lots of activity

Visitors to the Seattle TI99/4A Convention were kept busy with demonstrations and plenty of time to discuss computers with other users.

Vendors show wares at Seattle event

Miller Communications demonstrated its video flex card for the first time at any TI99/4A show at the Second Annual TI99/4A Convention in Seattle, Washington, Sept. 26.

The card, designed to be inserted in the P.E. Box and to allow, along with a digitizer, the opportunity to produce unlimited video graphics, is targeted for production after the first of the year. The demonstration was via videotape.



Come and get it

Chris Bobbitt of Asgard Software kept busy selling his products to visitors at the Seattle TI convention.

Other products demonstrated included Font Writer and Legends by Asgard Software, as well as an inside-the-PE-box speech synthesizer from RAVE 99. Jack Riley of Myarc demonstrated the MY-ART and Mouse for the Geneve 9640 and the beta-test MDOS for that machine, as well as the hard drive controller card.

Brian Collins, age 10, of the Puget Sound 99ers, provided special effects music demos for that group's booth. The Houston, Texas, Users Group sent disks for sale of Christmas music by Bill Knecht.

The guest book showed visitors from four states, and from the Canadian province of British Columbia. Tom Auleta of New Jersey was recorded as the visitor from furthest away.

A convention videotape is available for $25 from Barb Wiederhold at Queen Anne Computer Shoppe, 6102 Roosevelt Way N.E., Seattle, WA 98115. Visa and MasterCard are accepted, add $3 for shipping cost.

(This report is condensed from a report by Wiederhold, the fair coordinator, from the Queen Anne Computer Shop BBS, (206) 361-0895.—Ed.)

Hard times for Source network

By WALTER HOWE

The Source TISIG has fallen on hard times.

The Source was the first of the information services to support the TI-99/4A with its TEXNET. Many of us received a membership in TEXNET with our first modem purchase. More recently, TEXNET was upgraded to the present TISIG with reduced rates, a better message structure, and more responsive menus. These changes were too little and too late to compete well with CompuServe, GEnie, and DELPHI, which had all surpassed the Source in TI usage. The Source has told Blaine Crandell, the SYSOP of the TISIG, that it was not paying its way and might have to close down. As a result, some substantial efforts have been made to improve its service, and it has been given a trial period to try to increase its usage.

One of the changes, perhaps not an improvement but a modernization, will be to discontinue TE2 transfers. Most modem users have found their way to one of the fine terminal emulators that support Xmodem now, and that has become the standard.

A lot of old subscribers still carried on the rolls rarely call. If you are one of those, check in again and look over the changes. You may find it more to your liking. Telecommunications is the lifeblood of our orphan computer, even for those without modems.

The distribution of software and knowhow to different communities and regions largely depends on telecommunications. Every user group has software that was distributed by modem somewhere along the way before it reached them. The loss of one of the supporting services would only serve to constrict the arteries of that lifeblood a little more.

(Howe is assistant sysop on the Source—Ed.)

MY-ART—

(Continued from Page 41)

to be connected before loading. Here's a cautionary note: Plugging any other mouse into the Myarc mouse port could actually blow-out the 9640, according to Myarc, voiding the warranty. Myarc says this depends on how a mouse is wired, but the company has actually destroyed a 9640 with an incompatible mouse.

Also, if the Myarc mouse is not firmly plugged in the operation of the computer can be affected. With MY-Art, this can result in loss of cursor control, the solution to which is to make sure the mouse is plugged in correctly. However, it also affects other programs running in the TI mode. The symptoms include garbage appearing on the screen, the inability to access a disk drive, and degradation of program code in memory. Although you can stop these problems by pressing on the mouse-9640 cable connection, you'll have to go back to the GPL screen to restart, or even reboot if it happens to lock up. The ultimate solution, other than unplugging the mouse when not using MY-Art, is to attach the mouse connector to the 9640 with screws. This can be accomplished with ¾-inch 4-40 machine screws and nuts, available at Radio Shack.

MY-Art supports the standard drawing commands, including drawing with a "pencil," fill, lines, circles, boxes and rectangles, "cutting and pasting,", rotate, text, color mixing, and a variety of input/output commands. Help screens are available at the touch of a key at any time.

Being able to zoom in to a pixel and control the speed of the cursor with such precision are the strengths of this program from my point of view. Combined with patience, this would allow virtually anyone to create images of anything he can imagine.

The text placement tool is also quite interesting. Although only one font is supported at this time, you can expand it horizontally and vertically from small to as large as the entire screen. You can also rotate text or letters within a picture. I'm told that third-party programmers are working on collections of fonts for MY-Art as well as other graphic elements. Images created with other graphics programs can't be loaded into MY-Art.

Future enhancements include a program that will allow MY-Art images to be used in Extended BASIC or Advanced BASIC programs.

PC-GENEVE PROGRAM

Mike Dodd has released a program that converts PC text files for use with the Geneve or TI99/4A. Display/Variable 80 files produced with the Geneve or TI99/4A may be converted to PC format, and vice versa. The program runs out of the Geneve. I hope to have a review of it for next month.

Dodd also gets credit for the 9640 compatible version of PR-Base. The program runs in a 40-column mode, and is called Version 2.1. PR-Base is a Fairware program written by William Warren.

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A complete listing of User Supported Software is updated quarterly and is available from MICROpendium for $2. The listing runs about 12 pages.

DUMPX2

Extended BASIC graphics screen dump routine written in assembly. DUMPX2 easily loads from disk. Prints double-size (full page wide) and rightside-up. (The author says that most screen dump programs do not output to full-page size and often print sideways on paper.) Prints all but a small portion from each side of the screen. Very fast. Includes documentation. Requires Extended BASIC, memory expansion, disk system and Epson- compatible printer. Send $5, D,PRM to: Richard Marlen, 3156 Pinebrook Dr., Arnold, MO 63010.

DISK UTILITIES 4.0A

The latest version of John Birdwell's Disk Utilities programs. New features include: file copy with ability to rename output file; view a Display/Variable or Display/Fixed 80 file; ability to rename, delete, protect or unprotect a file; ability to copy all files; validation of disk for bad sectors; ability to initialize a disk from single-sided, single-density through quad- density; ability to date-stamp a disk. Several other features have been revised. Send $15 to: John Birdwell, 7052 Springhill Circle, Eden Prairie, MN 55344.

Those with earlier versions of Disk Utilities may obtain the upgrade at no charge by sending a disk and self-addressed, stamped return mailer. Or, send $5 and the author will provide the materials.

LABELER, CATALOGER, LOADER

These three programs are offered as a package. Labeler prints disk filenames to a mailing label that may then be affixed to a disk jacket. It formats the label according to label size and capabilities of the printer. Instructions are contained in the program. Requires XBASIC.

The disk cataloger outputs a disk catalog to the screen or a printer. The printer allows selection of two print sizes: pica with 6 lines per inch or condensed with 8 lines per inch.

The loader program lists only RUNable files on a disk. Data files, E/A files and merge files do not show up on the listing. Requires XBASIC.

Also offered is a second disk containing stand-alone graphics. Four print files are included for outputting in normal, reverse, single and double sizes.

Send $5 for each disk or cassette (specify which) to: Boyd Shugert, 1729 Timmonds Ave., Portsmouth, OH 45662. He will supply postage, media and mailer. Also, users should let the author know what printer brand they have so that he can customize the programs. Including a photocopy of the printer's command summary table would be helpful.

DUMPFAST

Available, several graphic screen dump routines written in XBASIC for users of GP-100TI, Seikosha GP-250, Gorilla Banana and Epson printers. Add these DUMPFAST routines to your XBASIC programs for single-size or double-size graphics print. Includes documentation. Requires XBASIC and printer. Specify printer model. Asking for $5 donation. Send D,PRM to: Richard J. Marlen, 3156 Pinebrook Dr., Arnold, MO 63010.

ARTIST+GRAPHX

This is a text-placement program that runs through TI- Artist using GRAPHX. Printing through GRAPHX would require adjustments. Included is a template for design, documentation and 10 predefined borders. With the program, users can create cards or posters with all text and graphics placed exactly where you want them to appear. The author asks for $10 for the program. He will supply the media. Send to: A.K. Kiddoo, 120 Boys City Dr., Winona Lake, IN 46590.

BASIC, XBASIC PACKAGE

The Mid-South (Memphis) 99 Users Group is offering a collection of BASIC and XBASIC programs written by members. This package includes six games (23Matches, Balloon, Blimp, Lawnmower, Trivia and Wheel of Fortune), five graphics demos (Analyzer, Applejam, Crumcom, Riverboat and Sorryatari), and four utilities (Miniature Database, Jacket Maker, MSUG-Librarian and Weather Forecaster). All are offered on one disk. A donation of $10 is requested after receipt of the programs. Send one DS/SD disk or two SS/SD disks with return mailer and postage to: Secretary, Gary W. Cox, 3174 Melbourne, Memphis, TN 38127.

MULTIPRINT COMMAND FILE

This program allows the user to insert printer commands anywhere on a spreadsheet created with Microsoft Multiplan. The program supports a variety of printers, including Epson and compatibles, Gemini, Star Micronics SG-10, GE TXP-1000, Seikosha GP-550A, Seikosha Gorilla Banana, Okidata and Prowriter. The author will customize the program for other printer brands if the printer's command codes are provided. Documentation is in D/V

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Legends

D&D adventurers will like this

By WALTER HOWE

I have spent a lot of hours (too many) playing Asgard Software's new adventure game, Legends. This superb effort by Donn Granros and Ed Johnson rivals Infocom adventure games in the scope of its play, although it is not a text adventure as Infocom games are. In Legends, a party of four adventurers with different abilities explores a land and its dungeons by means of a map which appears on screen and scrolls as the party traverses to different locations.

The total map is many times as large as the screen. You spend your time monster bashing, collecting gold, solving puzzles, gathering intelligence, and building up the strength and ability of the party through combat experience and gathering better weapons. Periodically, you must make your way back to the home town of Wizard's Rock for R&R, reprovisioning, and training the party members to higher skill levels. If all this sounds like Dungeons & Dragons, that's exactly what it is, of course.

Dungeons & Dragons at its best is exciting, imaginative, and takes some of the role-playing skills of actors in improvisational theater. At its worst, it is a mechanical exercise in dice rolling. In computer simulations of the game, it is much easier to achieve the latter than the former.

Infocom games (the Zork trilogy, Sorceror, Enchanter, etc.) strive to look like the former through hiding the dice rolling quite successfully and concentrating on text interaction. In an Infocom game, by typing out the things you want to do in fairly free-form text, you always have many possibilities for action and can pit your imagination against the creator's. It has always amazed me how many absolutely absurd things you can do that were anticipated by Infocom adventure authors. You are limited to things that they have anticipated, of course, but the limits are broad, and you rarely find the play mechanical.

In Legends, like in Tunnels of Doom from TI, you are much closer to the dice rolling. You can almost feel the dice roll as you engage in combat. Your characteristics such as experience points, hit points, magic points, etc., are displayed on screen whenever you fight.

Your attacks on monsters are represented in points; your own wounds are represented in points, and so on. In this way, the outcome of combat is always displayed in numerical form. It's very artificial, but it's the way that D&D players have done it for years, and it is accepted as part of this type of game. The challenge to the authors, who have adopted this type of approach, is to keep the game interesting through all the dice rolling. It takes a long time to build up sufficient skills and weaponry to survive against the bigger monsters and to explore the more dangerous regions of the large world of Legends. It should take a long time, though! If it is made too easy, the game loses much of its challenge—a flaw that is found in many conventional D&D games as well as computer simulations.

The authors have achieved a very successful balance in juggling these different considerations—keeping it interesting while avoiding making it a giveaway game. Not all will agree with me on this. It does take some patience when you are challenged by a wandering party of Ruffians for the ninth time in the game, and you set out to bash them into submission like all the previous eight parties you met. But you need the gold they carry and the experience in fighting to cope with the challenges ahead of you. There are many opportunities for you to calculate wrong, too, and see your own party wiped out

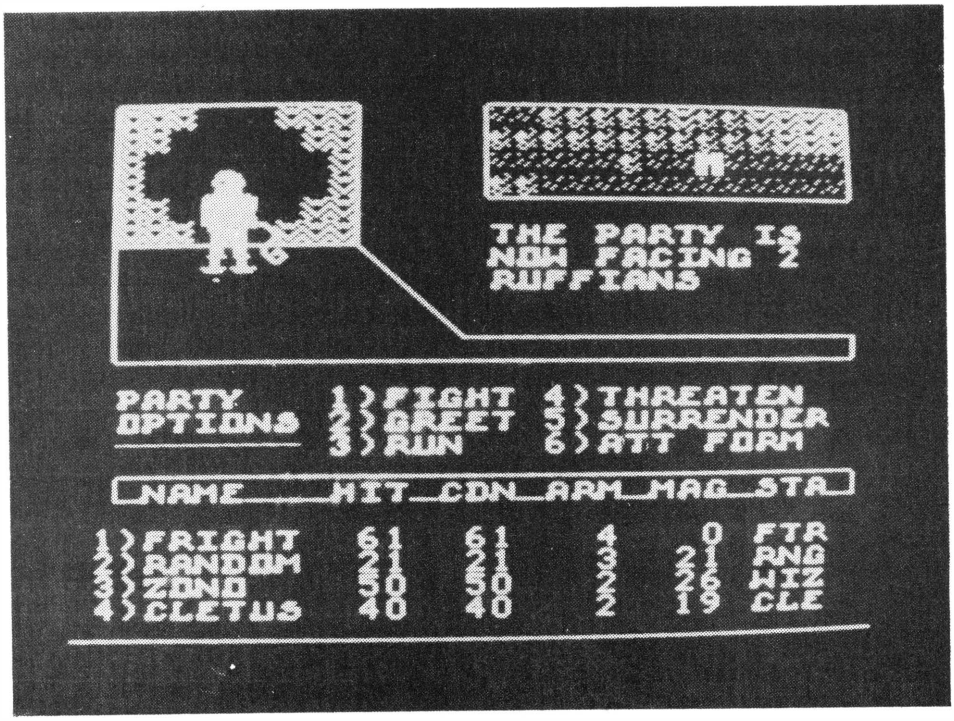
(See Page 49)

Review

Report Card

Performance	**A**
Ease of Use	**A**
Documentation	**A**
Value	**A**
Final Grade	**A**

Cost: $27.95
Manufacturer: Asgard Software, P.O.Box 10306, Rockville, MD 20850
Requirements:32K, TI Extended BASIC, 1 disk drive.



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Music Preprocessor

A musical keyboard

By ELTON SCHOOLING

It's freeware, it's called "Music Preprocessor," and for me it's the first time I've heard real music from my 99/4A.

We've all tried the "CALL SOUND" provision of TI BASIC; there are three tone generators and a noise generator. Aside from the last, the TI will sound any three notes together, from 110 hertz to above hearing. The tones are, however, flat: there is no vibrato such as we are accustomed to in instrumental music or the human voice and I expect this has disappointed some of us. Also, for my infrequent attempts at writing music, 110 hertz is not far enough into the bass. As a result, I have used "CALL SOUND" very little in my four years of 99/4A experience.

"Music Preprocessor" (MP from here) ingeniously uses language to arrive at enhanced control of the generators, providing vibrato (or something very like it) extending the bass an octave lower to 55 hertz, and supplying variable volume and attenuation (fade) for the music. All this with marked coding ease and with four-part harmony from *three* tone generators. (The noise generator is used only for the lowest bass notes, below 110 hertz.)

The program is by Norm Sellers, who has been physicist and mathematician, and is now a programmer in several languages. Sellers uses his program to learn songs for the barbership quartet he sings with. He sings bass, as I do, and for such uses it's easy with MP to code a song to play only the bass part, or any or all parts together. A great advantage over TI's "CALL SOUND" system is that MP allows setting "fade" (determines how quickly the sound diminishes) and volume for any *individual* note, and where else can you find *that*?

The coding of a musical piece with MP is not hard. To begin, you look at the sheet music in order to find the shortest note, then set the B (for Beat) value for the length of time that note should have, and then when that shortest note is coded, the T (for Time) value will be "1." If that value is an eighth note, then for a quarter note T has a value of "2," a half note becomes "4," etc. The F (for Fade) value is set, and the V (for Volume) value, and C (for Chop);

Review

Report Card

Performance . . . . . A
Ease of Use . . . . . A
Documentation . . . . . A
Value . . . . . A
Final Grade . . . . . A

Cost: Freeware donation
Manufacturer: Norm Sellers, 15 Dorset Dr., Broomall PA 19008
Requirements: Console, disk system, XBASIC and 32K RAM

these are all short line statements. You then proceed to the coding for the notes themselves. If the number of parts is fewer than four, the chop is automatically disabled.

In coding the actual music you simply replace the notes of the musical score with the numbers the author supplies in graphic form for the notes of the 12 separate scales, as, the key of C, F sharp, etc. Middle C becomes 16, D is 18, C an octave below middle C is 4, etc. Easy. (Note the coded music in the box on this page.) When I listened to the sample coding included, two of the pieces especially charmed me, "Music Box Dancer" and "Wedding Song," partly, perhaps, because I was not familiar with either, but mostly because I had thought that the TI couldn't do such things! Your taste may differ from mine: beauty seems to be in the eye of the beholder, one man's pie is another man's pizen, and maybe all you like is rock and roll.

The added octave or so in the bass register is adequate to supply a "bottom" to the chords. These extra bass notes are produced with the noise generator of the 99/4A in conjunction with the third tone generator, a use mentioned, but not well documented, in the "User's Reference Guide" which accompanies the 99/4A as purchased (II, 84,85). With this added bass, the range of MP is from a low, low A at 55 hertz, to an F at 2792 hertz, if I have it figured right. In MP terms, this is -11 to 69 in the numbers for the notes, or almost six octaves. Number 70 is reserved for a musical rest.

One nice thing about this program is the economy of statement. If line 200 reads "200 ! S 1" and line 400 is "400 ! G 1 2" the computer treats the two like a repeating "goto," and plays the music between those lines three times before it goes on and can return later at the discretion of the coder. A shift in volume, fade, chop rate, a key change, a change to minor: any alteration is done with a single short line statement. Assuming your music is coded in the key of D, a key change from D to E on line number XXX would be written "XXX ! K 1 1 1 1" for four-part music. A minor key statement, say a change from G natural to G minor, looks like this: "XXX ! M 11." (The "11" is the MP number for the key of G.) These short statements save a lot of memory and coding time. A very flexible program.

MP can be used with graphics and sprites, and the words to a song can be thrown on the screen while the song plays. This clever program has made me consider ways of hooking up the TV up to my stereo so as to improve the reproduction quality of the bass. I'd like to hear "Wedding Song" with a larger speaker. The pitiful thing they put on my TV doesn't do much for musical quality. I never cared before.

(See Page 49)

```
100 ! SAVE DSK1.SIXPENCE
110 CALL LINK ("EMUSIC","START","STOP","RUN")
120 ! / BY ES
130 ! @P-
140 ! START
150 ! F 2 2 2
160 ! B 20 100
170 ! V 2 4 4
180 ! T 2 N 23
185 ! T 1 N 25
190 ! T 2 N 23
200 ! T 1 N 20
210 ! T 1 N 16
220 ! T 1 N 20 16
230 ! T 1 N 23 20 16
240 ! T 6 N 28 23 20
245 ! T 2 N 27
250 ! T 1 N 27
260 ! T 2 N 18
270 ! T 1 N 20
280 ! T 1 N 21
290 ! T 1 N 21 18
300 ! T 1 N 21 18 15 F 0 0 0
310 ! T 6 N 18 15 11 F 2 2 2
```

QS-Wheel and Spin to Win

These wheels don't go

By HARRY BRASHEAR

Shades of Vanna White! Does everybody have to get the same idea at once?

The market is flooded with "Wheelies," so I get to do two at once just to keep up.

Quantity is not the problem here, though, it's quality and these games are proving that haste makes waste.

I have a version in drive one called QS-Wheel. It comes from those great champs of protection, Quality 99 Software. The other, in drive two, is from Harrison Software. They are a new name to me and their product is called Spin to Win. One program has a wheel (QS-Wheel), and the other has a girl to play hostess, although it looks more like a gargoyle—maybe it's gar-girl. Anyway, whatever it is, you have to wait for it to turn the letters around to see what you have.

Both products have good documentation. As a matter of fact, the one from Quality 99 has seven full pages for you to plow through before you get down to the game. If you don't already know how to play this game, you sure will when you get done. Harrison's, at two pages, is more to the point, but it's enough to do the job if you've seen the show.

QS-Wheel is an autoload in XBASIC but with Spin you have to RUN "DSKn.SPIN". What is so hard about using a LOADer? Regardless, the first thing you have to do in both cases is wait! The titles and initialization are extensive and from this you can tell that both are Extended BASIC programs. Spin to Win does have some assembly routines to help it along, but I can't say if Wheel does or not. As usual, you can't catalog a QS disk.

Once you get into the game area of the programs, a few key presses are all that's necessary pretty much to handle the entire action, "S" to "spin" the wheel, "B" or "V" to buy a vowel, etc. The rules are as close as they can get to the TV game and up to three persons can be tortured at once in Spin. Wheel is more proficient in this onrushing tide of tedium with up to four players being allowed to participate at once.

When you think of this game being played on a computer, I dare say that the first thing coming to mind would be the cosmically important wheel of chance. "The game" by ANY other name could only exist by the inclusion of that multi-colored wheel. You, of course, visualize what the wheel should look like on the screen and how it should react to a spin. Then you must also assume the limitation of the computer and the brilliance of the programmers to simulate such an action-packed device.

Well, between the two versions, QS-Wheel gives this the best effort. A round, red, white and blue wheel in the upper right corner "spins," via color changes, I believe. Also the letter blocks AND a line under the player's name blink through these colors at the same time. It's very distracting, and what's worse, there is NOTHING written on the wheel. It's completely blank! You are surprised each time the amount of money, free spin, bankruptcy or whatever appears on the screen. There's no anticipation, just whirling, blinking colors. If I don't know there's a $5,000 marker lying between a bankrupt-

(See Page 49)

Review

Report Card

	QS-Wheel	Spin to Win
Performance	D	C
Ease of Use	B	B
Documentation	B	C
Value	D	D
Final Grade	C	C+

QS-WHEEL

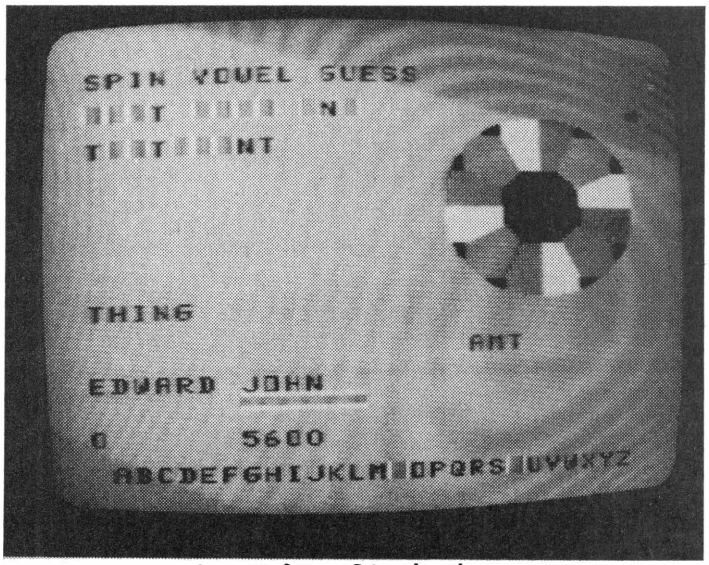
Cost: $19.95

Manufacturer: Quality 99 Software, 1884 Columbia Rd. #1021, Washington, DC 20009-5161

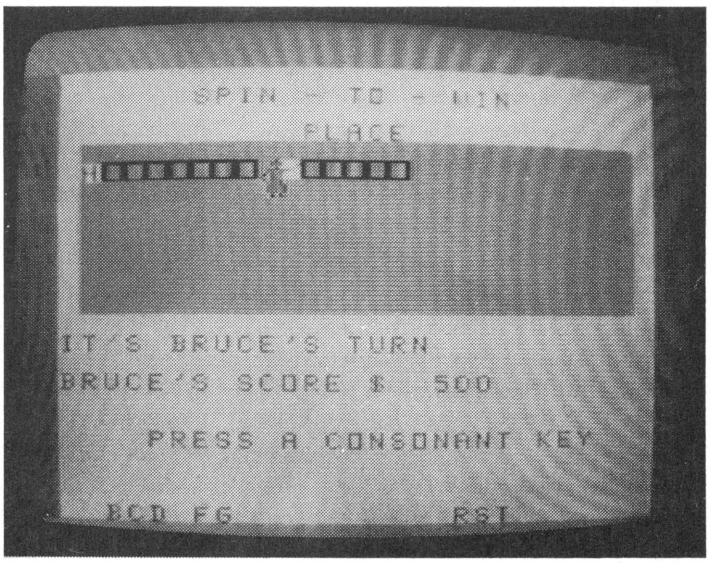
SPIN TO WIN

Cost: $17.95

Manufacturer: Harrison Software, 5705 40th Place, Hyattsville, MD 20781



Screen from QS-Wheel



Screen from Spin to Win

USS—

(Continued from Page 45)

80 on disk. The author asks for a $10 donation by those who use it. Send D,PRM to: Jack & BJ Mathis, 5941 E. 26th, Tucson, AZ 85711.

2ND EDITION OF EXCEPTIONAL GAMES

Two disks are offered separately. One is Exceptional Games II. Included are Platoon, Whitesnake, Poleracer and Bartender. The second disk contains Pirate's Notebook. The author asks for a $3 donation for both disks. Send two diskettes with PRM to: Steve Patterson, 2351 Ragan Woods, Toledo, OH 43614.

CHRISTMAS SONGS

This collection of musical programs features animated graphics, sing-a-long words, low bass notes, unusual screen clears and good music. There are 14 songs included on this disk, plus a file called — FILEREAD which will explain features of each song. The songs include Angels We Have Heard on High, Let it Snow/Let it Snow, Caroling/Caroling, Deck the Halls, O Come All Ye Faithful, Santa Claus is Comin' to Town, Good King Wenceslas, Hark the Herald Angels Sing, We Wish You a Merry Christmas, Jingle Bell Rock, O Holy Night, Little Drummer Boy, O Christmas Tree and Sleigh Ride. The author as for $5. He will provide disk, mailer and postage. Order from: Bill K. Knecht, 815 Yorkshire, Pasadena, TX 77503.

LEGENDS—

(Continued from Page 46)

when it is at its weakest after a series of encounters. You have control of enough factors in the game—how you equip yourself, what magic potions you buy and carry with you, what difficulty level you set for the current venture, where you explore, how thorough your intelligence gathering is, what hidden puzzles you have figured out—to keep the game fairly fresh through the long hours of play. It is not nearly as confining as Tunnels of Doom. Patience is a prerequisite, but your patience will eventually be rewarded. Don't expect to finish the game in a day, either.

The game comes on two full disks (full in 4A terms) with a game booklet. If you have double-sided or double density drives, the booklet recommends you copy the unprotected disks to a single disk to preclude a need for disk-swapping during play of the game. Frequent reference to disks is required as the game is many times as large as the memory capacity of the 4A. You can speed play up even more by playing from RAMdisk, as long as you have close to 720 sectors of RAMdisk to use, and can redesignate the RAMdisk as drive one. I have been playing the game from the 720 sector RAMdisk capability built into the 9640 as drive 5, but to do so, I went through the copied disk and changed all references to DSK1 to DSK5 instead. The program autoloads from XBASIC, but since I have altered my XBASIC to look for DSK5 instead of DSK1 anyway, it all works fine in my setup.

The game will be stimulating to some and a bore to others. I think I have told you enough to decide for yourself which category you will find yourself in. The game is superbly conceived and executed. It is by far the best game of the dice rolling D&D type for the 4A. Nothing else comes close. If you have found lesser efforts interesting in the past (Grannros' Old Dark Caves, Tunnels of Doom, the Doom of Mondular series, etc.), you will be enthralled by this one.

My ratings assume that you are interested in this type of game, and are given accordingly. If you were bored by such games in the past, there is a chance that this one is so much better that it will interest you this time, but don't count on it.

MUSIC—

(Continued from Page 47)

I found the documentation excellent. I recommended a small change or two, and the author obligingly said he'd fix them.

Practice makes for easier and better coding. I recommending starting small, with something not too world-shattering, like maybe a nursery rhyme set to music (''Baa, Baa, Black Sheep'') or maybe the birthday song (Happy birthday to you...) just to get the coding under control. Lots of time for the big opuses later on.

About the ''chop'': this is the method Sellers uses to get four parts from three-tone generators. He rapidly alternates (or chops) the notes from any two of the four musical parts, as a xylophone is often played. To my ears it is attractive, and I am pleased to be able to use chop with four parts, rather than be limited to three. When fewer than three parts are played, the unused generators are employed to intensify the quality of the sounds being produced.

The music student will be interested in writing his own music. This can be expedited by making an overlay for a piano or keyboard, writing the numbers for the appropriate keys and taping them in place. The suitable manipulation of fade and other factors can result in sounds like a calliope or banjo or music box (or bagpipes! Ugh!)

Coding music for the MP program is fun, a lot of fun. It's been an old dream of mine to record a melody, and while playing it back, to add a second accompanying voice, and while playing THOSE back to add a third, etc. I've been doing that with MP and enjoying myself hugely. I have yet to code a song that completely satisfies me (perfectionist that I am), but I have spent with it some of the most interesting hours of my years with the TI99/4A.

WHEELS—

(Continued from Page 48)

cy and a ''lose your turn,'' why should I care? What is Quality 99 trying to protect me from? Have their protection schemes now graduated to include my psyche? Are they going to save me from the stress of fun and fantasy? Yes, and it's working, I don't feel a thing!

On the other hand, Spin to Win has NO wheel of any kind. The numbers just appear, drift across the screen and disappear about two-thirds of the way across, slowing down en route to simulate the wheel doing so. Of course, this lack of action is more than made up for by the little gargirl that flips the letters over. Boy, will you wish that little critter was an option on a good run of letters.

Speaking of options, both programs have allowed for phrase file expansion. In the case of Spin, you may update the existing file by changing, deleting or adding to it. With Wheel you get to create a whole new file without destroying the one that comes with it. If you're lazy, Quality 99 will sell you additional files containing 50 phrases for $4.95 each. I would also like to men-

(See Page 51)

Newsbytes

TI-74, 95, CC40 users get newsletter

According to Dan Eicher of Indianapolis, Indiana, TI is now publishing a free newsletter for owners of the TI-74 and 95.

For more information, write Programmable Calculator News, P.O. Box 53, Lubbock, TX 79408. A TI representative said that the publication may also be ordered by calling 1-800-TI-CARES.

Also, Eicher says, TI PPC Notes issues an annual compendium of new and information for owners of the CC40, TI-74 and 95. For more information, write PPC Publications, P.O. Box 1421, Largo, FL 34294-1421.

Recorded information for Dallas user group

The Dallas TI Home Computer Group now has a recorded announcement concerning the club's coming meetings at INFOMART, which can be reached by calling (214) 746-3297.

Club president Louis Guion said that the group normally meets on either the second or third Saturday, but since their affiliation with the Computer Council of Dallas requires that they meet whenever the CCD meetings can be scheduled, this phone recording has been established so members and guests can check dates and times.

Meetings are open to guests at no charge. Guion says free parking is available at INFOMART, where more than 50 computer and computer supply vendors display their wares in the basement during meetings. He notes that several have TI99/4A merchandise and many have ribbons, paper and other computer-related items.

Membership in the group is $15 per year. For information, write the group at P.O. Box 29863, Dallas, TX 75229 or call Richard Roberts (214) 579-7822.

TI-KEEP updated

The TI-KEEP BBS, (805) 499-5415, now runs 300/1200/2400 baud, according to sysop Greg McGill.

He says message bases include The Pub (general conversation, TI clubhouse (TI only), Computers and Software, Discussions and Opinions (voicing opinions and political or other discussion), Jokes and Funny stuff, Gameroom & Adventuring, Trading Post and the Never Ending Story (a user-added story about anything).

Other online features are three categories of text files: TI99/4A information, General Texts and Joke and Demented files.

The TI-NET gameroom includes a casino with six games of chance. McGill says he has adapted the eight games and other programs from Techie BBS software to TI-NET. These are TI-Country Club Golf, Warewolf Adventure, Mars Adventure, the original Techie Adventure, Raspion Adventure, Battleship, a Biorhythm Calculator and a Football Bookie simulation.

The BBS supports private E-mail and public Automessages. A TI BBS list of most of the TI supporting BBSes in the United States was supplied by Jim Thomas of the Capricorn BBS. An online RLE for Omega callers is an original piece of art depicting the KEEP.

McGill says persons who call and mention they read about the BBS in MICROpendium will be given access without validation.

Company branch announces policies

Barry Traver of Genial Computerware has announced that all correspondence or orders for the Genial TRAVelER or the John Calvin project should be addressed to Barry Traver, Editor, Genial Computerware, 835 Green Valley Dr., Philadelphia, PA 19128. Phone is (215) 483-1379.

Correspondence relating to or orders for other Genial Computerware products, such as XBasher, XB:Bug, GRAM Packer, Horizon RAMdisk EPROM or Remind-Me, should be addressed to Genial Computerware, Box 183, Grafton, MA 01519 (the Boston branch of the company).

Traver says the two branches operate semi-independently, and the Philadelphia branch is at present behind in correspondence and publication, but has established a schedule to catch up.

Current prices are $24 for the John Calvin project (six flippy disks); $36 for Volume 1 of Genial TRAVelER (six issues of the "magazine on disk" plus free bonus disks), $36 for Volume 2 of Genial TRAVelER (six issues) or $65 for Volume 1 plus Volume 2 of Genial TRAVelER (if ordered together).

Since issuing his announcement, Traver has undergone emergency retinal surgery, and has been temporarily medically barred from computer and reading activity.—Ed.

GEnie adds services for subscribers

Comp-u-store OnLine is now available to GEnie subscribers in the U.S. and GEnie has reduced its $2400 baud surcharge from $10 to $7.50 per hour and added 44 cities which will have local telephone access to the network.

The Comp-u-store service offers a database of more than 250,000 products at 10 to 50 percent less than manufacturers' suggested list prices, according to William Louden, GEnie general manager.

The basic rate for the GEnie service is still $5 per hour for non-prime time access at either 300 or 1200 baud, and the new reduced rate for 2400 baud access is now $12.50 per hour instead of $15 per hour.

New cities with local access to GEnie are:

Alabama: Huntville and Montgomery.

Arkansas: Bentonville and Fayetteville.

California: Corona, Rancho Bernardo, Thousand Oaks, Vallejo and Visalia.

Colorado: Greeley.

Florida: Ft. Myers, Naples, Sanford, Sebring and Starke.

Illinois: DeKalb, Joliet and Naperville.

Indiana: Kokomo.

Louisiana: Alexandria and Mandeville.

Massachusetts: Quincy.

Michigan: Farmington Hills and Marquette.

New Jersey: Atlantic City, Cherry Hill, Perth Amboy and Raritan.

New Mexico: Las Cruces.

New York: Elmsford and Glens Falls.

North Carolina: Fayetteville and Newton.

Ohio: Mason and Youngstown.

Oregon: Corvallis.

Pennsylvania: Bloomsburg, Langhorne and Reading.

Tennesee: Bristol.

Texas: Beaumont, Lufkin and Sherman.

(See Page 51)

Newsbytes

(Continued from Page 49)

Virginia: Harrisonburg.

GEnie has a number of RoundTable groups, including one for the TI99/4A. Scott Darling is TI sysop on GEnie.

For further information, call GEnie Client Services at 1-800-638-9636.

TICOFF '88 set

TICOFF '88 is scheduled for March 26, 1988, at Roselle Park High School in Roselle Park, New Jersey.

This year's show will be an "Orphans & Clones" show, piggybacking MS-DOS, PC compatibles, according to Robert Guellnitz, co-coordinator.

This is TICOFF's third year. Admission is $5 and all proceeds go to the scholarship fund of Roselle Park High School's student council. In the past two years, more than $4,000 has been raised for scholarships for deserving students, according to Guellnitz, who is student council advisor at the school and science supervisor for the Roselle Park public schools. The project has received a "Top Ten Projects Award" from the New Jersey Association of Student Councils.

Guellnitz says any attendee who prepays admission will be sent a coupon entitling him to one free disk of public domain software (indicate if IBM or TI software is desired).

The student council is running a "swap shop" where, for a tax deductible commission of 10 percent, any attendee can offer for sale any unwanted computer materials (no "pirated" materials allowed).

To prepay, send a check for $5 and a self-addressed stamped envelope to TICOFF, 185 West Webster Ave., Roselle Park, NJ 07204. For further information, call (201) 241-8902 or 241-4550.

Tigercub reduces software prices

The 130 programs in the Tigercub Software catalog have been reduced to $1 each, plus $1.50 per order (not per program) for the cost of cassette or diskette and mailing, according to Jim Peterson of Tigercub Software.

Minimum order is $10. Cassette orders will be filled only until stocks of blank cassettes are used up, Peterson says.

The 18 Full Disk Collections have been reduced to $5 each, postpaid, minimum order $10.

The four Tips from the Tigercub disks are still available at $10 each, and the three Nuts & Bolts disks at $15 each, postpaid.

Tigercub has also prepared three "Care" disks full of text files, mostly consisting of tips and lessons on programming. These were intended primarily for free distribution to user group newsletter editors in exchange for their newsletters, but they are available to anyone else for $5 per disk, postpaid.

Peterson says Tigercub is attempting to maintain a current and accurate address/phone listing of TI user groups, based on return addresses from newsletters, listings in MICROpendium and other current sources. This listing may be downloaded from the Central Ohio 99ers TIBBS, (614) 263-3412, or may be obtained on disk from Tigercub for $1.50.

For further information or to order, write Tigercub Software, 156 Collingwood Ave., Columbus, OH 43213.

Horizon lowers prices

David Romer of Horizon Computer Limited announced new reduced prices for the Horizon RAMdisk. The new prices are $45 for the PC board, manual and software, $38 for the PC board only (no minimum purchase required), $195 for a constructed 192K (DSSD) card with manual, software and a 90-day warranty. Prices include shipping in North America.

Cartoon disk offered

A flippie disk containing 25 cartoons by Hopeton Willis, *The Art of Hopeton,* is available in either TI-Artist, Joypaint 99 or GRAPHX format (two disks in GRAPHX format).

Many of the cartoons have been printed in the TITEX newsletter. Jay S. Leber, newsletter editor, says the cartoons are not colored or filled and are easily modifiable. He notes that several of the cartoons are "explicitly X-rated."

The TI-Artist or Joypaint 99 version is available for $10 postpaid and the GRAPHX version for $11.

Users should specify format desired when ordering and make checks payable to Leber. Write him at 36 Fox Place, Hicksville, NY 11891.

Those who order will receive Leber's program series CAP N SPEAK which he says allows the speech synthesizer to read any DV/80 file aloud. He says CAP N SPEAK can read letters, documentation and BBS buffer dumps regardless of their length of content. The programs require TE II, Extended BASIC (or Myarc XB) and the Speech Synthesizer.

USERS GROUPS—

(Continued from Page 42)

Outside U.S.

Canada

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tion that QS has come up with some great ideas on how to turn this into an educational game that I had never thought of. Some of them are downright ingenious. I won't tell you about them because, if I did, you wouldn't have *any* reason to buy it. I promise, they are really interesting ideas.

Both the games worked, which means they didn't crash, but somebody forgot the RANDOMIZE statement in the Quality 99 version. I started the game six times and it came up with the same phrase first time, every time. Also, unless I have the world's worst luck, I think I got way too many "bankrupts." It seemed like I was getting an awful lot of "free spins," too. (It's pos-

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User Notes

c99 bug

There is a small bug in Versions 1.3 and 1.31 of Clint Pulley's c99 programming language. The filename for #include is truncated to six characters after DSKn. This will be corrected in future releases. To avoid the problem, use filenames consisting of six and fewer characters.

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every time. Also, unless I have the world's worst luck, I think I got way too many "bankrupts." It seemed like I was getting an awful lot of "free spins," too. (It's possible that I missed parts of the game. My wife told me that I got a real funny look on my face as the wheel went around. I can't remember. Maybe it was the blinking lights . . . I think I'm falling in love with my pet rat, Arnold!)

In desperation and pure boredom, I turned the games over to my teenaged daughter and sat back to watch her play. I hadn't said a word to her about my opinions, but she voiced every one of my frustrations as she played. Of the two games, we both preferred the Harrison version. At least it played like it was correctly programmed, and in spite of the slowness of it, had a certain cute appeal. The selection of prizes in round four was an interesting touch and the fact that there was a separate phrase file for the last round helped add difficulty to the game play.

Neither was one that I would write home to mother about, and I want to make one thing very clear: **I do not hate games!** I love good games that are well thought out and programmed properly. They don't have to be all assembly or some other high class language to please me. I have seen other versions of this game, including an excellent fairware version, that I like very much. I am sure that the people involved would like to take me out in the back alley, but I would rather they gave some serious thought to what they are doing and a little more respect to the intelligence of the TI community, and go back to the drawing board for another crack at it.

Use discovered for edge character

This comes from Mark Shafer of the Bluegrass 99 Computer Society, Lexington, Kentucky. He writes:

I have just discovered a use for the edge character. Hold on to your hats 'cause it's a wild one. Type in the following code:

```
100 CALL CLEAR :: CALL SCREE
N(7):: FOR X=1 TO 8 :: CALL
COLOR(X,2,16):: NEXT X :: CA
LL VCHAR(1,31,31,96):: CALL
HCHAR(7,30,31)
110 CALL HCHAR(8,2,32):: ACC
EPT AT(7,1)SIZE(-28):A$ :: D
ISPLAY AT(15,1):A$
120 CALL KEY(0,K,S):: IF S=0
 THEN 120
```

When you run the program, just tyupe anything. Watch what happens when the cursor reaches the edige character I put in column 30. You are no longer limited to one line as usual with the ACCEPT AT command. The screen may look funny, but you don't need to use a colored edge character to do this trick.

What is happening is when the computer executes an ACCEPT AT, it remembers what screen address (row/column) to end the input. By putting the edge character there, the cursor will skip the next four characters, thinking it reached an end of a line. The cursor never reaches the ending screen address.

A word of caution: Insert will cause characters to be dropped off the end of the string and Delete doesn't work properly on the first line. Erase works fine, though. Also, string variables are limited to 255 characters. Enter more than that and you'll lose characters.

Limited RECALC

Need to recalculate one cell in a Multiplan spreadsheet but don't want to wait for the entire sheet to recalculate? Easy enough. Set the pointer to the cell and press E for edit. Only that cell will be recalculated.

NLQ font for NEC, Prowriter

Owners of the NEC8023A and C. Itoh Prowriter can have "correspondence quality" output with a circuit board available from a supplier in New York.

According to Jack Shattuck, who installed the board on his NEC 8023A, the board replaces the high-density font replaces the proportional font. The new font is of uniform width (91 characters per line). It is available for $30 from: House of Hardware, RD #1, Box 227; Burdett, NY 14818. There is an additional $5 shipping charge.

According to Shattuck, installation takes about an hour, and requires a soldering iron and solder sucker.

Categorical Cataloger

What do you do when you want to find out what D/V80 files you've got on a disk? You catalog every file and program on the disk, that's what you do. It's time-consuming, for sure, and inefficient. But there are ways to change this, and the Categorical Cataloger, CATCAT for short, is one of them.

CATCAT, by Jack E. Shattuck, of Wilmington, Delaware, allows the user to catalog a disk by file type. So, if you want to see what D/V80 files are on a disk, you select that file type from the program's menu and that's what you'll get.

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Reader to Reader

Harold K. Liter, of 732 W. 14th St., Gardena, CA 90247, is seeking to exchange information with Pascal users. Readers who have an interest in Pascal and the TI99/4A p-system are encouraged to contact him directly.

The Reader to Reader column is designed to put readers in touch with each other. Anyone with a specific problem or question that may be answered by other readers is encouraged to submit an item.

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The program allows the user to select several file types — Display/Variable, Display/Fixed, Internal/Variable, Internal/Fixed and Program. It can be used with multiple disk drives and runs out of Extended BASIC. There is also an option to output the catalog to a printer.

Accompanying the catalog listing is a running total of sectors used for files in the category being scanned. The filename and size appear as well as the total number of used and available sectors on the disk.

The basis for the program is Jim Peterson's Tips from the Tigercub No. 27, released during the fall of 1985. "At that time, Jim provided an annotated version of his catalog program, which helped me analyze which parts were crucial to what I needed to do," writes Shattuck.

(As a reminder to readers, the numbers that appear at the end of each program line are created by the CHECKSUM program published in the October 1987 edition. It is not necessary to include them when entering the program.—Ed.)

```
100 !CATCAT by Jack Shattuck
 with thanks to Jim Peterson
 !102
110 OPTION BASE 1 :: DIM PG$
(127),V(127,3)!172
120 T$(1)="d/f" :: T$(2)="d/
v" :: T$(3)="i/f" :: T$(4)="
i/v" :: T$(5)="pgm" :: ON WA
RNING NEXT !192
130 DISPLAY AT(1,1)ERASE ALL
:"Your choice to catalog?":
 :"1) display/fixed":"2) dis
play/variable": :"3) interna
l/fixed":"4) internal/variab
le": :"5) program" !021
140 ACCEPT AT(1,28)VALIDATE(
"12345"):TYPE !015
150 IMAGE ### !215
160 ! IF YOU HAVE MORE THAN
ONE DISK DRIVE, DELETE THE !
 IN LINE 180  AND THE FIRST
STATEMENT IN LINE 200 !083
170 ! next line needed only
for multiple-drive systems !
003
180 !DISPLAY AT(12,6):"DISK?
 (1-3): 1" :: ACCEPT AT(12,1
9)SIZE(-1)VALIDATE("123"):D$
 :: D$="DSK"&D$&"." !226
190 DISPLAY AT(15,1):"Use Pr
inter (Y/N)? N" :: ACCEPT AT
(15,20)SIZE(-1)VALIDATE("NYn
y"):PR$ :: IF PR$="Y" OR PR$
="y" THEN YES=1 !249
200 D$="DSK1." :: OPEN #1:D$
,INPUT ,RELATIVE,INTERNAL ::
 INPUT #1:N$,A,J,K :: DISPLA
Y AT(1,3)SIZE(27)ERASE ALL:S
EG$(D$,1,4)&" - Diskname= "&
N$; !204
210 GOTO 440 !008
220 IF YES<>1 THEN 230 :: OP
EN #2:"PIO" :: PRINT #2:"":K
IND$;" files on":SEG$(D$,1,4
)&" - Diskname= "&N$ !125
230 DISPLAY AT(2,3):"Availab
le=";K;"Used=";J-K:"  Filena
me   Size Type   P":"  -----
----- ---- ------ -" :: I,VT
=0 :: TT=J-K !174
240 IF YES<>1 THEN 250 :: PR
INT #2:"Available=";K;"Used=
";J-K:"Filename   Size Type
  P":"--------   ---- ----
 -" !166
250 FOR X=1 TO 127 :: IF X/1
8<>INT(X/18)THEN 290 !173
260 GOSUB 420 :: DISPLAY AT(
23,1):"  Stop(0) or More(1):
  ?" !060
270 CALL KEY(0,K,S):: IF K=4
8 THEN 400 ELSE IF K=49 THEN
 280 ELSE 270 !058
280 CALL HCHAR(5,1,32,608)::
 X=1 !120
290 I=I+1 :: GOSUB 420 :: IF
 I>127 THEN K=X :: GOTO 400
!105
300 INPUT #1:P$,A,J,B :: NN=
NN+1 !203
310 IF LEN(P$)=0 THEN 400 !2
51
320 IF ABS(A)<>TYPE THEN 300
 !List only what you want to
 see !240
330 DISPLAY AT(X+4,3):P$ ::
PG$(NN)=P$ :: DISPLAY AT(X+4
,14):USING 150:J :: DISPLAY
AT(X+4,19):T$(ABS(A)):: V(NN
,1)=A !252
340 IF YES<>1 THEN 350 :: PR
INT #2:P$;TAB(12);J;TAB(17);
T$(ABS(A));:: IF V(NN,1)<1 T
HEN PRINT #2:TAB(24);"Y" ELS
E PRINT #2:TAB(24);"" !114
350 V(NN,2)=ABS(B):: V(NN,3)
=J !221
360 X$="  "&STR$(B):: IF TYP
E=5 THEN 370 ELSE DISPLAY AT
(X+4,22):SEG$(X$,LEN(X$)-2,3
)!063
370 VT=VT+J :: IF A>0 THEN 3
80 :: DISPLAY AT(X+4,26):"Y"
 !101
380 SX=VT :: CALL KEY(0,KK,S
T):: IF ST=0 THEN 390 :: FLA
G=1 :: GOTO 400 !009
390 NEXT X !238
400 CALL HCHAR(23,1,32,32)::
 CLOSE #1 :: IF YES=1 THEN P
RINT #2:"":"Sectors =";TAB(1
2);SX :: CLOSE #2 !237
410 END !139
420 DISPLAY AT(24,1)SIZE(-13
):"  Sectors:  " :: DISPLAY
AT(24,14):SX :: RETURN !070
430 CALL HCHAR(23,1,32,32)::
 RETURN !231
440 IF TYPE=1 THEN 450 ELSE
IF TYPE=2 THEN 460 ELSE IF T
YPE=3 THEN 470 ELSE IF TYPE=
4 THEN 480 ELSE IF TYPE=5 TH
EN 490 ELSE 220 !058
450 KIND$="Display/fixed" ::
 GOTO 220 !158
460 KIND$="Display/variable"
 :: GOTO 220 !215
470 KIND$="Internal/fixed" :
: GOTO 220 !006
480 KIND$="Internal/variable
" :: GOTO 220 !063
490 KIND$="Program" :: GOTO
220 !091
```

Copying slashes with Geneve

The Geneve doesn't take kindly to slashes, or so it seems. Any file or program name that includes a slash needs to be modified when copying. If this isn't done, the results may be unpredictable, including loss of other files on a disk.

When copying such files, for example, surround it with quote marks. Example: A> COPY "SYSTEM/SYS" B:

Avoid using the wildcard character to copy several similarly named files or programs if any of them include slashes. The

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quote marks are not counted as part of the filename.

Geneve users will notice that slashes are actually read as periods, similar to PC or MS DOS.

Reset switch has possibilities

This reset switch mechanism, designed by John Willforth, appeared in the newsletter of the West Penn 99'ers, Jeanette, Pennsylvania. Readers should use caution when making hardware modifications and undertake them at their own risk.

The advantages of this reset mechanism is that the 4A can be reset without turning it off, a cartridge can be inserted without a reset, and normal operation is also supported.

Diagram 1 depicts the modifications you'll need to make to the 4A GROM port connector. We're reproduced it without modification.

There are two switch options: The one switch option and the two-switch option. The wiring on the GROM port connector is the same regardless of which option you use.

The one switch option (see diagram 2) uses a switch that has three positions, labeled X, Y and Z. Unfortunately, the switch may be difficult to find since it was used primarily in minicomputers in the 1960s and '70s. With the switch in the Y position (center), the user may insert a cartridge into the console with no reset occurring. This is useful for screen dumps of cartridges.

The X position (push and release the spring-loaded switch) allows the console to receive a reset signal. This is useful for freeing a locked console without having to turn it off.

The Z position (normal, the switch remains in this position when selected) puts the cartridge slot into the mode that TI originally designed.

Refer to diagram 3 for a depiction of the switching mechanism.

The two-switch option requires a single-throw, single-pole switch (STSP) with an open or closed circuit. Also required is a second push-button switch that produces a momentary contact when pressed. See diagram 4.

The two switches may be used to perform the same tasks as the one switch option. The push-button switch is used for the reset signal while the STSP switch is used to select the normal and non-reset modes. Refer to diagram 5.

User Notes is a column of tips and ideas designed to help readers put their computers to better use. The information provided here comes from many sources, including TI user group newsletters. MICROpendium pays $10 for any item sent in by readers that appears in this column. Mail User Notes to MICROpendium User Notes, P.O. Box 1343, Round Rock, TX 78680.

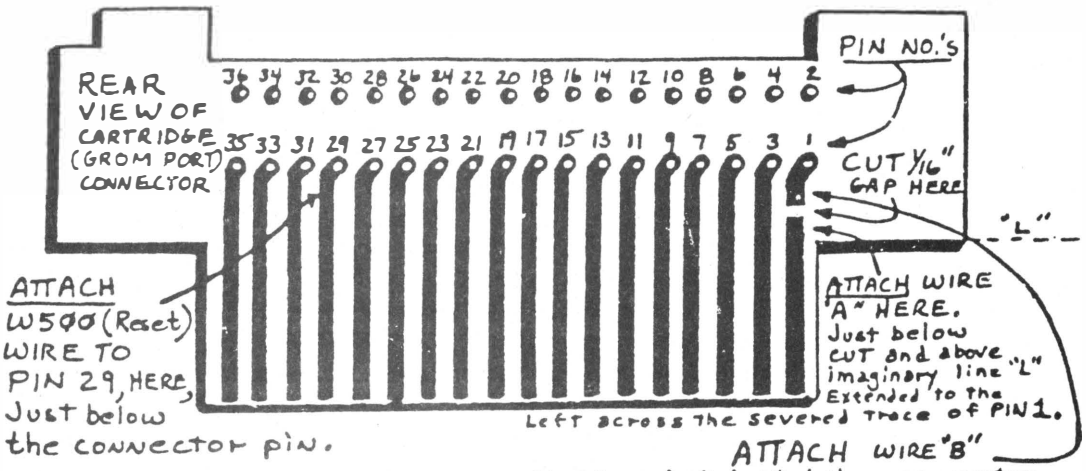

Diagram 1

One Switch Option

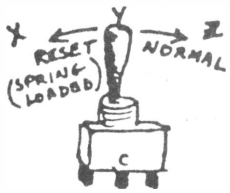

Diagram 2

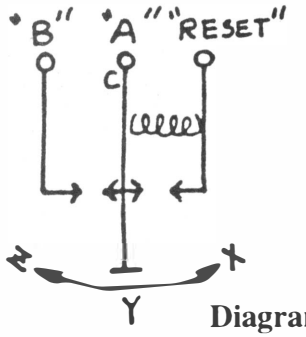

Diagram 3

Diagram 4

Two Switch Option

STSP switch

Momentary contact switch

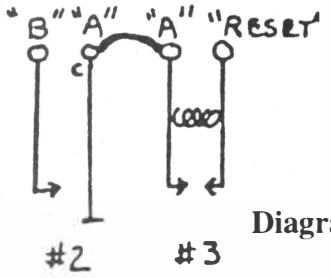

Diagram 5

Classified

Software

BA-WRITER V 1.4 UPDATE

BA-WRITER V 1.4, now available, is the Mail Merge Active version. It is compatible with all known peripherals (Horizon RAM Disk placed at CRU above >1100 included). It will be distributed by:
Mrs. LaVerne Searcy
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TI-99/4a
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* PerCom Disk Drive/w Controller $225
Speech Editor $20, Side Port Ext. Cable & Cart-Port Ext. Cable $25 ea, Plato $45
*P-Code Card/w Software $159. TI Manuals 9900, 9901, 9902, 9904, 9918, 9919,9995 CALL
TI Extended Basic $39, used Consoles $60
TPA $22.50 & Font Disk 1 $11.50 same day UPS
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